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BARNWELL, W.

DISEASES

OF A

Warm and Vitiated Atmosphere,

FROM

CLIMATE, LOCAL SITUATION, OR SEASON OF THE YEAR.

TOGETHER WITH

An Historical Essay

ON THE

EXPERIMENTAL PHILOSOPHY OF HUMAN LIFE,

THAT OF

DISEASES AND ALSO OF REMEDIES.

By WILLIAM BARNWELL, M. D.

LATE SURGEON IN THE EAST INDIES.

SECOND EDITION.

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THE PREFACE.

THE preſent volume is intended to recommend thoſe principles, and practices, which we have found moſt ſucceſsful, in the diſeaſes which moſt frequently occur in conſequence of a warm temperature of the atmoſphere; whether in tropical climates, or in the ſummer, and autumn, of more temperate latitudes. For although we have of late had many publications, on ſome of the ſubjects of our inveſtigations; hitherto, we are not acquainted with any, which can ſupercede the utility of this. We have endeavoured to collect a knowledge of the cauſes, and to detect the external ſources of diſeaſes, which are derived from warm climates, local ſituations, or ſeaſons of the year. And alſo the internal ſtates of the body, which prediſpoſe ſome perſons, more than others, to particular affections. How far we have ſucceeded, muſt be left to the intelligent, and candid part of mankind to determine. But we may premiſe, that no pains or labour, have been ſpared, in order to render it uſeful. And we believe very few authors of original merit, have eſcaped our peruſal; in a courſe of about twenty years of ſtudy and practice; a large proportion of which was paſſed in warm, and unhealthy climates, during all of which time we have been collecting materials, as will appear by a peruſal of the work—our principal aim having been to render it intereſting to ſcience, and uſeful to mankind.

We have therefore, diveſted it as much as in our power, of technical terms; and where they were unavoidable, their explanations have been generally added; in this form, we hope that it will be more generally uſeful, to gentlemen of all deſcriptions, and eſpecially to thoſe who go to warm climates, or who reſide in the country; for as the ſummer, and autumnal diſeaſes of temperate latitudes, are very ſimilar to thoſe of warm countries, there will be much information found here, reſpecting them, not to be found in any printed work, hitherto extant—ſo that even ſhould we fail in rendering it entertaining, we are confident it will be uſeful, to thoſe who may pay due attention to the peruſal of it. But we may premiſe, that a work of this nature, will require more attention from the reader, than a haſty, or ſuperficial performance. It is not intended for the carping critic, who only read to find out defects ; nor for the ſuperficial, or frivolous ; but for the cultivators of experimental ſcience, and the application of it to practice—and with ſuch we have already ſome aſſurances of its approbation.

But as experimental phyſical ſcience, and practical medical purſuits, rather than the ornaments of language, have employed our attention ; our only aim is to be intelligible ; neither do we conſider that phyſical purſuits, either require, or admit of the flowers of rhetoric, or the fictions of poetry.—But thoſe who may think otherwiſe, are requeſted to confine their judgments to that part of the work, with which they may be well acquainted, as it would be neceſſary that their opportunities, ſhould at leaſt equal thoſe of the writer, in the various ſubjects of inveſtigation, before they can poſſibly be qualified for judges. In the preſent ſtate of our acquiſitions, we only conſider ourſelves in a ſtate of progreſſion, and not of perfection. Therefore, we would rather point out, what may appear to us, the beſt modes of proceeding, than preſcribe rules to others ; for we prefer the mode of aſſiſting them, in forming juſt conceptions of diſeaſes, their cauſes, natures, and cures, rather than to form theories to their hands ; for as the opportunities, the capacities, and diligence of each individual differ ; the theory of one, never can be equally applicable to others. It is therefore the duty of each phyſician, to acquire as much genuine experimental medical ſcience, as their opportunities, and their capacities will admit of—and they will find this the only uſeful foundation for a practical theory.

The ſources of diſeaſes, we conſider as being derived from two great claſſes : the one of theſe, is from the external ſurrounding ſubſtances ; but principally from the ſtate of the atmoſphere, and its various impregnations. And the other from the internal formation of the body, the temperament, conſtitution, or habit, &c. To the external cauſes, belong the effects of climates, local ſituations, and the ſeaſons of the year ; and in ſome meaſure alſo infections. Theſe cauſes are of all others the moſt obvious ; they are therefore known, in ſome meaſure, to all mankind—to this claſs, principally, we ſhall confine ourſelves in the preſent work.

As a ſubject cloſely connected with our other inveſtigations, we have introduced a ſmall ſpecimen of our mode of reaſoning, and of deducing conſequences from facts, in phyſical geography, it being a ſubject peculiarly intereſting, in all its departments ; we would wiſh to turn the general attention towards it. But as there are many peculiarities, in local ſituations, which cannot admit of being well explained under that head—we have choſen alſo, to give ſome ſeparate ſketches of medical topography ; and as infections are often unconnected with local ſituations, they have been attended to ſeparately.

The analyſis of medical ſurgery was introduced, in order the more clearly to demonſtrate the neceſſity of the practice of ſurgery, as the only certain, ſenſible, and experimental introduction, to the more abſtruſe practice, in the internal diſeaſes of the human body, and alſo, as a popular introduction to the treatment of ſome of the moſt common ſurgical diſeaſes, the defect of which we have often witneſſed.

The affections in which the bile appears in exceſs; its abberations, and defects, being cloſely related to the diſeaſes of a warm atmoſphere, and particularly the diſeaſes of the liver—we have paid particular attention to theſe phenomena; and the diſeaſes of the liver, will appear to merit more attention, than they have commonly received. We have, therefore, been the more particular on this claſs of diſeaſes, having for many years had peculiar reaſons, for conſidering them as diſeaſes of the firſt magnitude.

Dyſenteries, and diarrheas, being ſo nearly related, and often ſo difficult to be diſtinguiſhed, we have treated of together, the better to explain their natures, and modes of treatment; other leſs important ſymptomatic affections of the firſt paſſages, are alſo taken notice of, at the ſame time. A general diviſion of fevers might, with much propriety be made into periodical and continued fevers, and their ſubdiviſions, but we have followed the common mode of ſeparation, into intermittents, from remittents, and delineating their innumerable varieties; but the genuine typhus fever, as it occurs in the Britiſh iſlands, we have never yet ſeen in America, unleſs in newly arrived emigrants; we therefore do not believe, it is a native production of the country. Therefore, what is ſaid of it, is rather intended for an introduction to the peſtilential fever, than a deſcription of the typhus.

With reſpect to the modes of inveſtigating the internal cauſes, natures, and remedies of diſeaſes. The piece, termed phyſianthropy, was intended for a part of the preliminaries, of a private courſe of medical inſtructions, which has, for more than ſeven years employed much of our attention, the object of which is, to unite medicine with ſurgery; and the elementary principles with the practice of both, a ſmall ſketch of which is ſubjoined, which has not before been offered to the public; it is meant to be calculated ſo as to form a part of the liberal education of gentlemen, as well as of medical ſtudents, on their entering into the other particular departments of ſtudy, and practice, ſo as to convey the moſt comprehenſive, general, and connected epitome of the whole. Something ſimilar to what globes, or maps of the world convey, to thoſe who are entering into the ſtudy of geography, and the plan is in conſiderable forwardneſs. For we believe that the diviſions, and ſubdiviſions of medical ſcience, and practice, renders ſuch a plan as this, the more neceſſary; for by exhibiting a chart of theſe ſubjects on a ſmall ſcale, a more competent judgment may be formed of the extent, and comparative utility of the whole, and of its various departments.

We are well aware of the maſs of deep rooted prejudices, the very oppoſite opinions, and ſophiſtical doctrines, which many parts of theſe deductions have to encounter; but as our great object has been the inveſtigations of uſeful experimental ſcience, and truth, we are happy in having ſome proſpects, that it will in due time prevail, over all obſtacles. Every part of our practical deductions, have been many years, ſubmitted to the teſt of experience, and almoſt all of them in various parts of the world; for although they might have been differently, and perhaps better arranged, they are not premature.

Thoſe who are beſt acquainted with the difficulties, attending the original inveſtigation of phyſical ſubjects, and the deduction of practical information, from medical and ſurgical facts, by experience and reaſon will, we do not doubt, be moſt ready to excuſe any ſmall defects which they may find here. The opinions of experienced practitioners, we have often found a difficulty in obtaining, hitherto; but when in print, we ſhall hope for the ſentiments of our medical friends, more at large. For ſome inaccuracies muſt have eſcaped us, but they are as few as we could prevent.

It muſt be the fate of this work, as it has been of its author, to make its way into the world, without the patronage of the great, or influential; conſequently, it muſt depend on its own intrinſic merit. But we have the conſolation to be convinced, that none of thoſe, whoſe judgments we moſt eſteem, will form their opinions of the whole, or of any part of it, from that circumſtance alone.

January 4*th*, 1802.

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A
SPECIMEN
OF
PHYSICAL GEOGRAPHY.

AN inveſtigation of the phyſical cauſes of heat and cold, and of their effects on the human body, may very properly precede a work on the diſeaſes of warm climates, and thoſe of the autumnal ſeaſons of temperate countries. Regiſters of the ſtate of the air, as its heat and weight; and alſo of its moiſture, have long been common to medical men: But beſides theſe, we find ſome local ſituations, having properties peculiar to themſelves, as in the neighbourhood of marſhes, rivers, mountains, ſandy plains or populous towns, &c. by which means the properties of the air are often changed, and impregnated with miaſmata, or effluvia of various ſpecies. But numerous obſervations, when looſe and detached from one another, like the rude materials of a building, are ſeldom very inſtructive to the ſpectators, as they cannot without much labour and attention, diſcover the deſigns of the collectors; but, by endeavouring to find out the connecting parts, which may ſerve as a chain of inveſtigation, we may facilitate enquiries of this nature, to thoſe who are entering on theſe purſuits.

The preſent inveſtigations are founded on obſervations: we mean alſo to trace the cauſes of theſe phenomena, and alſo their effects: Here it will be perceived, that we are often obliged to take new paths, and to view our ſubjects in different directions; and even this, if we ſhould be ſo unfortunate as not to carry conviction, has been allowed to be uſeful in the purſuits of ſcience. We conſider phyſical Geography in particular, as well as the phyſical nature of the human body, as having been leſs cultivated than they ſhould have been, eſpecially when we remember the importance of theſe ſubjects to mankind.

In the preſent work we cannot attempt regular treatiſes on each of theſe ſubjects; we only offer theſe pieces, as ſpecimens, or ſketches of what may be done in future. The effects produced by different climates, by heat and cold, by local ſituations, and the various ſtates of the atmoſphere, on the human body, have been long acknowledged by the obſerving part of mankind, ſo that ſcarce any practical work on medicine appears, without ſome obſervations to this purpoſe. By this means, others may be warned of thoſe inconveniencies, which cannot be prevented, ſo as to guard againſt them; and where prevention is practicable, we have endeavoured to point out the means by which it may be accompliſhed in the moſt effectual manner.

The effects of heat immediately applied to the human body through the medium of the atmoſphere, when in a common ſtate of purity, are different from thoſe produced by its action, in decompoſing other ſubſtances, either of vegetable, or animal origin; and although they have commonly been blended together, they may admit of their ſeparate properties, being more advantageouſly communicated, when conſidered each by themſelves; and hence we derive the propriety of ſeparating phyſical geography from medical topography; for although often connected, they are ſometimes ſeparate, as in the open ocean, particularly, topography is ſeldom applicable; and although ſeamen are expoſed to all the varieties of ſituation, and the diſeaſes which are the effects of climate, yet this chiefly happens to them when in harbour, or on coaſts, and they will there find the general obſervations, equally as applicable to them, as to others.

To phyſical geography alſo belongs the ſtudy of the mineral, vegetable and animal productions of countries; but we ſhall confine ourſelves to its more immediate relation to mankind; principally with reſpect to the ſtate of the atmoſphere. Topography is always conſidered as a branch of geography, and in this ſenſe we mean to treat of it here, rather as a neceſſary ſubordinate branch, than as a ſeparate part of ſcience; we entertain no doubt but this may be a more uſeful ſpecies of information, than ſeveral others which have been eſteemed eſſential parts of medical information; than the chymiſtry of the arts, and many other purſuits which have amuſed phyſicians; but we do not mean to diſapprove of theſe purſuits, by thoſe who have ſufficient time, and opportunities to improve in them, but to recommend thoſe ſubjects which may be more uſeful to many perſons, in different ſituations. But as the conſideration of the various modes, either phyſical or mental, by which human bodies are affected, is the diſtinguiſhing line between the rational and the empyrical practitioner, every means ſhould certainly be cultivated, which is conducive to this intention. The properties of the various departments of regimen and medicines, &c. have been variouſly attended to: but the phyſical cauſes, and conſequences of their effects, as deduced from experiments and obſervations, are hitherto, ſtill in want both of cultivation and improvement; this muſt appear obvious to any perſon who will conſider the heterogenous opinions and diſcordant modes of practice which are prevalent in the preſent times.

The firſt part of the inveſtigation which we have choſen, has attracted the attention of as many obſervers and reaſoners, as any phenomena of nature; it was choſen, becauſe it was thought to be intereſting, as well as curious. But as we had ſome new information to offer, and viewed ſubjects in different lights, to that in which moſt others have done, it has imperceptibly led us into a general review of phyſical geography. Here it will ſoon appear, that we do not attempt to trace diſeaſes, merely by climates, and parallels of latitude.—Our plan has a tendency rather to expoſe the weakneſs, and inſufficiency of this mode of reaſoning, by ſtating the various other circumſtances which affects the temperature of different parts of the world; and alſo the local cauſes, the changes which the air undergoes, by reaſon of the various exhalations with which it is impregnated. It may be excepted againſt us, that we pay little or no attention to the water of the places mentioned here; but the water which we drink, we have had ſufficient reaſon to be convinced, is by no means of ſo much importance to health, as has been commonly alledged; unleſs where it is in a ſtagnant ſtate, and impregnated with vegetable ſubſtances, &c. and when it is in this ſtate, it is duly attended to. But the water which is uſed for drink being of very little importance with reſpect to health or ſickneſs, the author firſt ſuſpected on the following account: In ſome very unhealthy ports in India, it was the water which was accuſed of cauſing ſo much ſickneſs; conſequently, in order to avoid this ſource of diſeaſes, we uſed Thames water of which we had a ſufficiency, but without the leaſt ſafety, or mitigation of the prevalent diſeaſes, more than when we uſed the ſpring or river water of the country.

The following performance is the moſt material part of a paper which was read before the Philoſophical Society of Philadelphia, five years paſt, which having met with the univerſal approbation of the ſociety, was ordered to be printed, but was loſt, or miſlaid whilſt in the preſs, and part of it printed, the author being at the time in a diſtant part of the country.

An investigation of the Phyſical cauſes of the difference in the temperatures of the United States of North America, and correſponding latitudes in Europe.

Felix qui potuit rerum cognoſcere cauſas.
Virgil.

THERE are few natural phenomena more commonly obſerved, or more obvious to the ſenſes, of thoſe who are acquainted with the countries on both ſides of the Atlantic, than the preſent ſubject of conſideration; the philoſopher, the navigator, and the emigrant, have obſerved it, ever ſince the communication has been opened; and many conjectures have of courſe been formed in order to account for it; theſe, as we might reaſonably expect, were founded on the moſt obvious relative differences which prevailed between theſe two quarters of the world; as the ſtate of cultivation, the face of the country, lakes and mountains. Of theſe, we ſhall ſelect thoſe which appear to be of the greateſt conſequence; for ſome of them do not merit any rational attention, and others produce effects, the very reverſe of thoſe which is alledged of them.

It may be neceſſary, in the firſt place, to take a general view of the temperature of different countries; and of the cauſes of the difference which prevail on account of latitude, or local ſituation; and here the inquirer will be obliged to purſue ſome new and uncultivated paths; but he has not exhauſted the ſubject, there is much more to be done in the ſame manner, and by purſuing ſimilar paths, ſtill abundance of room lies open for new diſcoveries, and improvement in phyſical geography, navigation, &c.

Although the latitudes of different places, are of much importance with reſpect to their temperature, eſpecially in the ocean, and alſo in ſmall iſlands when ſufficiently diſtant from continents; yet on land the elevation appears to influence it much more, as may be proven by the coldneſs of high mountains in every part of the world, for three miles of perpendicular height above the level of the ocean, in warm or temperate climates; will be a more certain cauſe of a continued coldneſs, than ſixty degrees of latitude, although our greateſt mountains are only as the breadth of a hair, to a globe of ſix feet diameter; for at that height there is a conſtant froſt, even in the torrid zone; but at Peterſburgh, in Ruſſia, there are warm ſummers, and even in latitude 80°, north, there often has been warm weather in ſummer, as the Greenland whale-fiſhers can teſtify. But was the ſea uninfluenced by land, by wind, or currents, we might come near determining the annual temperature, by the latitude of any place, but on land, elevation, and ſome other local circumſtances, influence it much more, as we find by many obſervations made in different parts, &c.

The firſt apparent cauſe, and that which undoubtedly contributes to this difference, is the uncultivated ſtate of the country, by reaſon of the ſmall number of inhabitants, and the quantities of wood. I was very much pleaſed ſome years ago at meeting with a little eſſay in a London magazine, which was wrote by Dr. Hugh Williamſon, on this ſubject; he has foretold many things relative to the climate, which we already ſee, in part, is coming to paſs; that as the country comes to be cloſely inhabited, and the wood cut down, and the land cultivated, the cold of the winters would be leſs ſevere, this the old inhabitants of Philadelphia, and the neighbouring country can teſtify, is verifying every year, for there are ſcarce any winters at preſent ſo cold as formerly. For trees and buſhes, or other vegetables, which ſhade the earth from the rays of the ſun, muſt certainly prevent it from extricating the latent heat which is accumulated in the earth, and can be only ſet free, and made ſenſible by the operation of the ſolar rays, on this account a bare ſandy country will always be hotter in ſummer, than a woody one. With reſpect to the number of fires, and the breathing of men, and other animals, which are always, by far more numerous in a cultivated, than in an uncultivated country; we cannot doubt but they produce a very ſenſible difſerence in making the air warmer than otherwiſe it would be, for a much greater number of animals are kept by men in a cultivated country, than it would be able to ſupport, by its ſpontaneous productions, beſides the number of men, and of fires, and other means which extricate latent heat, and make it ſenſible and fluid, inſtead of being fixed and imperceptible, and all land animals, as well as men, are continually diffuſing ſome of their animal heat into the atmoſphere around them, which they extricate from the air in breathing, and by the different animal functions. So that I have often ſeen a thermometer raiſed three or four degrees, by two or three people ſitting in a cloſe cabbin on ſhipboard, in leſs than an hour. I can give all theſe cauſes their due weight, but yet there muſt be others, than the quantity of wood, or the want of inhabitants, and conſequently of cultivation. Dr. Williamſon's opinion that the ſummers, as well as the winters will grow more temperate by clearing the country merely, we cannot ſo readily agree with, although in ſome ſituations, it may conduce to a more free ventilation, and circulation of air, yet we cannot believe that it will make the thermometer one degree lower in ſummer; but from uncovering the earth, eſpecially where it is ſandy and ſtony, it will certainly heat the air more, as already ſtated, by the direct rays of the ſun. The rays of light do not operate ſo powerfully, unleſs where they are reſiſted, as in ſolid, denſe, or black ſubſtances; but when they fall upon a tranſparent body which admits them to paſs through it, as water, or glaſs, very little heat is extricated, therefore the larger the body of land is together, as well as its being flat, bare, and ſandy, or ſtony, the more hot it will become in the ſummer. Water, as the ſea, or lakes, being tranſparent, ſuffers the rays of the ſun to paſs through, without obſtructing them, and therefore very little heat is extricated from water by the ſun, on this account large bodies of water are always temperate, both with reſpect to heat and cold, but large bodies of land, are the more intemperate, generally in proportion to their magnitude, and other conſiderations to be mentioned hereafter. On this account, iſlands, eſpecially if ſmall, and in the middle of a large ocean, or far enough removed ſrom the influence of any continent, ſo as not to be affected by its air, are the moſt temperate habitations: and the ſmaller the iſlands, and the farther they are ſrom continents, they are the more temperate. But the larger any iſland is, and the more near it approaches, either in vicinity, or magnitude to a continent, the greater we may expect the exceſs as of heat and cold, their other relative ſituations being the ſame. The reaſon why water reſiſts the exceſſes of cold, as well as heat, is becauſe water being a moveable body, continually in motion, and agitation with the winds, prevents the ſurſace from being ſo exceſſively cooled as the ſolid earth, by turning up the more temperate part of the water from below; hence, although ſmall bodies of water freeze in the temperate climates, becauſe they may be thoroughly cooled, as ſmall lakes, or rivers; yet large collections of water will not freeze in ſimilar ſituations, as the ſea, or large and deep lakes, becauſe the continuance of one winter is not ſufficient to cool the large body of water ſufficiently to freeze, and the coldeſt part, where expoſed to the cold air near the ſurface, is, by the agitation of the wind, continually changing place with the hotter part from below. And ſo much ſor the general temperature of both large and ſmall bodies of land, and of water.

High mountains are a very great cauſe of cold in any ſituation, or a high elevation of a country, principally by reaſon of the greater rarefaction of the air, on theſe elevated ſituations, and likewiſe their being detached a little above the common ſurſace of the earth, although our greateſt mountains, bear no greater proportion to the diameter of the earth, than the breadth of a hair to a globe of ſix feet, which is imperceptible; nevertheleſs, an elevation of three miles perpendicular higher than the ſurſace of the ſea, will be cold enough in any latitude, even within the tropics, to be covered with froſt the whole year round; witneſs that on the iſland of Owyhee, where captain Cook was killed, and the Andes, and Cordilleras, in South America, this coldneſs on high mountains muſt be more owing to the rareſaction of the air, than any other cauſe; as heat is apt enough to aſcend upwards. A mile or two does not make any material alteration on a plain ſurface of either land or water; but the difference of the rarefaction of the air is very great in a mile perpendicular above the ſurface of the ocean, for the rarefied air cannot retain the heat in a ſenſible form, ſo well as a more denſe body of air, is capable of; nevertheleſs, plains or vallies in the neighbourhood of theſe high, and cold mountains, may be very hot; ſcarce any thing leſs ſo, than if there were no ſuch mountains in their vicinity, as neither their cold can deſcend with any great rapidity into the plains or vallies, nor the heat of theſe laſt aſcend from its own denſe medium below, to the rare medium above, but the winds in mountainous countries contribute to mix the hot air of the valleys, with the cold air of the mountains, beſide the heated air below has a tendency to raiſe upwards, and muſt keep an almoſt conſtant circulation in mountainous and hilly countries, and therefore the air in them, muſt be ſomewhat colder, than in flat, low and ſandy countries, as we may ſee in the low eaſtern parts of the Carolinas, and Georgia, and weſtwardly towards their hills and mountains, the country is much more cool, than towards the ſea coaſt.

But the great ridges of mountains in North America, cannot be the cauſe of the ſuperior cold of the winters, for there are much higher mountains in the ſame latitudes in Europe, and between ſome countries of the mildeſt climates on the continent, as the Alps, between France and Italy, which are remarkable for the pleaſantneſs of their climates, and the Pyrennees, between France and Spain, very temperate countries; but ſome of theſe mountains are ſo high as to be covered with an eternal froſt and ſnow, and yet the countries on both ſides of them are not remarkably cold. The North American mountains exhibit no ſuch cold in the ſummer, and therefore cannot be the cauſe of the ſuperior coldneſs of the country over that of Europe.

Although wood and other vegetables may moderate the heat of ſummer, both by their ſhade, and by increaſing the evaporating ſurface, as is ſufficiently proven by convincing experiments generally known: yet there is no deficiency of heat in ſummer, even in the moſt woody parts of America when theſe cauſes act moſt powerfully, as we may learn by compariſon with other countries in the ſame latitudes, and ſimilar as to ſituation on continents, &c. But it has been of late ſhewn, we believe by Mr. De Mairan, that the cold of winter is moderated by the heat which the earth imbibes in ſummer, or more properly ſpeaking, by that which is extricated by the ſun's rays; the influence of this however we believe is but little. The clearing and cultivating a country may, no doubt, obviate both theſe cauſes of coldneſs. The former ſtate of this country, and its weſtern parts at preſent, are not much different from thoſe countries totally deſtitute of inhabitants, as the ſmall number of them, even where moſt numerous, made but little alteration on the face of the country, by clearing or cultivation. But, on conſidering the ſubject, there appears to be ſome other more important reaſons, hitherto unnoticed, for theſe already mentioned, are by no means adequate to produce the effect ſtated.

Recourſe has alſo been had to the great lakes, to account for the coldneſs of the winters of North America; but any one who will conſider what is already ſaid of the effects of large bodies of water upon the air of their neighbourhood, muſt be perſuaded that the lakes inſtead of making the climate more cold in the winter, will have the oppoſite effect, and ſoften the rigor of the winters, as well as temperate the heat of the ſummers; and the larger the body of water, the more powerfully it will operate in that way, whether lakes, or ocean; and as theſe lakes are both very large and numerous, their effects muſt be conſiderable, in rendering both the heats, and colds milder: for there are no virtues in ſalt water more than freſh, in that reſpect; for it is well known that theſe lakes never freeze, more than the ſea, although a great cold will freeze a little about their borders. Water is known to be a great conductor of heat. Beſides the agitation of winds is continually mixing the water on the ſurface, with that below it; but when the ſurface is much cooled in winter, the warmer water below will endeavour to riſe upwards and change places with it; on theſe accounts the exceſſes of either cold or heat are not ſo great on water as on land, for our hardeſt froſts, never penetrate ſix feet deep into the earth. On this account, large bodies of water, whether ſalt or freſh, ſeldom ever freeze in the temperate latitudes, eſpecially where they are deep and broad. The great lakes never freezing, only for a ſmall ſpace about their ſhores, and the ſtraits between them; ſalt water bays or lakes, require a greater cold to freeze them than freſh water does, and the ſalt ſeparates in the freezing: the great maſſes of ice towards the poles, being all freſh water when diſſolved, although frozen from ſea water; the ſame proceſs of freezing is uſed in ſome northern countries to make ſalt from ſea-water. On theſe accounts we invariably find ſea-coaſts, and the ſhores of large bays, and lakes univerſally more temperate than farther inland in all parts of the world; for the water imparts both its heat and cold more readily than the land, ſo that we are fully convinced the north weſtern lakes, and even Hudſon's bay, contributes to render the winters as well as the ſummers of North America more temperate than they would otherwiſe have been, were they not there.

There has lately come to view a piece on the effects of population, and the changes of temperature, by the Abbe Mann, in Belgium; he coincides with Dr. Williamſon's opinion, with reſpect to clearing, and cultivation, and adduces many proofs from hiſtorians, and poets, for the effects produced in Europe by theſe means; but his reſearches appear to have been almoſt wholly confined to the Ancients; but to them he appears to have paid particular attention, on this ſubject, reſpecting Europe. His mode of inveſtigating the ſubject is more in the ſtyle of a great claſſic ſcholar, than that of a modern experimental philoſopher. He eſtimates the coldneſs of Europe from lat. 40°. to 50°. north, to be equal to that of Siberia, Lapland, or Hudſon's bay, at preſent. It is to be remembered that theſe were natives of Rome, or of Italy, who wrote in thoſe times, and the propenſity of poets to exaggeration, is well known, or even of hiſtorians, when deſcribing countries different from their own, for they do not appear to have had any other means of meaſuring the cold than their ſenſations, or the freezing of rivers, which they ſometimes make mention of. But even at that period, we have ſufficient proof, that Europe was not ſo cold as other parts of the world in the ſame latitudes, or the Goths and Vandals, could not have been ſo numerous as they proved to be, a few ages afterwards.

But with reſpect to North America, the Abbe obſerves that the great breadth of the continent towards the polar circle, and its being ſo narrow in the torrid zone, muſt be the means of increaſing the coldneſs of the winters; this object ſtruck us on our firſt application to the ſubject, but we could not find it of much conſequence; on farther conſideration, and ſtating it in other points of view, eſpecially when we take other ſubjects into conſideration.

With reſpect to the breadth of the continent in the high northern latitudes being a cauſe of coldneſs, or the narrowneſs of it, in tropical countries being a cauſe of a deficiency of heat, we can only judge of this by a compariſon with other countries, in ſimilar ſituations; but as it is obſerved in the firſt place, that there are no deficiency of heat in ſummer, in America, one half of this argument falls here, and with reſpect to the other, whether a frozen region conſiſts of ice, or of land, is very indifferent even as to its own temperature, and much leſs ſo, to that of diſtant countries; the only reſpect in which they can differ, is in the elevation, where there are mountains, but even their influence does not appear to extend far north or ſouth, from themſelves. We have no reaſon to ſuppoſe that we have our cold or heat from ſuch diſtant parts, although winds are very expeditious vehicles of either, cold or heat. But it has not yet been proven that there are more of the new continent within the polar circle than there is of the old world. By Mr. Hearn's journey from Hudſon's bay to the north weſt, it would appear that there is not, beſides by far the greateſt part of South America, is within the tropics, and yet the ſouthern part of it is ſcarcely capable of cultivation beyond 45°. ſouth, even on its weſtern ſide, and the eaſtern not even to 40°. although its breadth there is ſcarcely 600 miles in a right line, and no other land near it to influence its temperature; for the larger the ocean, the better it preſerves the medium, and ſmall iſlands or necks of land, always partake very much of the temperatures of the ſurrounding ocean, and the larger the continent, the greater the extremes of heat, or cold.

The many large tracks of marſhy ground, have alſo been taken into the account by the Abbe Mann; it is probable from the accounts of travellers that there are more marſhes in the interior parts of North America, than in any other part of the world; but even allowing this to be the caſe, their principal effects would only be that of moderating the heat of ſummer, as the ſame extent of water would do, at moſt; but their effects in increaſing the coldneſs of winter muſt be very little, or nothing. Although we are not diſpoſed to differ from ſuch reſpectable authorities as Dr. Williamſon, and the Abbe Mann, who exactly coincides with him in every particular, but reſpect them both for what they have done in their inveſtigations, yet our own courſe of inquiry obliges us to differ from them, in believing that clearing and cultivating the country will leſſen the heat of the ſummer, as well as the coldneſs of the winter; the heat of the ſummers muſt be increaſed by cutting down the woods, although it will allow a more free ventilation, as the bare ſurface will be more expoſed. It is in the open ocean that we are to ſearch for a ſtandard of temperature in different latitudes, as Mr. Kirwan has pointed out. And it is remarkable that Captain Cook was not able to penetrate farther than 71°. ſouth, and that only in one place, in ſeveral trials in different parts of the ſouthern ocean. The very ſame latitude where he was ſtopped by the ice, to the northward of the ſtraits between Aſia and America. This therefore appears to be the natural boundary, between a continual ice and water, in other parts of it he could only get within the polar circle. But the northern part of the Atlantic is navigable to 81°. or 82°. every year, by the whale fiſhers. The reaſons for this hitherto unaccounted for phenomena, we ſhall endeavour to adduce hereafter. But whether theſe mountains of ice, as they were named, reſted on land or water, was very indifferent, with reſpect to the temperature of the ſurrounding atmoſphere, unleſs what the height might cauſe; but there was no land to be found there, and it is moſt probable that the ice was afloat in the ſea.

Mr. Kirwan who has laboured more than any other, in order to aſcertain the relative temperature of different countries, and latitudes, collected from thermometrical regiſters, in almoſt every place where they were made, always found, on forming an imaginary ſtandard, taken from the different parts of the ocean, too much however adapted to Europe, from moſt of the obſervations being made there, that the Atlantic, near the continent of Europe, and thoſe countries neareſt it all along the weſtern coaſts, but particularly in the iſlands of Europe, were always higher than the ſtandard, in the proportion of at leaſt ten or fifteen degrees of latitude in their mean annual heat; but that in other parts of the world the temperature was rather below it; ſo that it is as cold in the United States, or in China, at 40° N. lat. as it is in Europe at 55°; for America does not differ ſo much from any other part of the world, in this reſpect, as it does from Europe; for the eaſtern ſide of Aſia, is altogether as rigorous in winter, and South-America is very near as much ſo: But in Europe the mildneſs of the cold is conſiderably greater, than in any other quarter of the world, and of this mildneſs, Britain and Ireland enjoys it in the greateſt perfection, as no other part of the world is ſo temperate, between 50° and 60° N. latitude, from the advantages of their inſular ſituation, and the temperature of the ſurrounding ſeas, which we ſhall examine hereafter; and the whole of the weſtern coaſt of Europe is alſo more temperate than this continent is farther inland. In order to account for this mildneſs of the European winters, Mr. Kirwan adduces the breadth of the Atlantic, the northern part of it being not leſs than 700 miles; whereas, at lat. 66° the Pacific is narrowed to a ſtrait of only 40 miles in width, between Aſia and America. This muſt be allowed to be a circumſtance of conſiderable importance; but others muſt be taken into view; for it is not the breadth of the ocean alone, that cauſes this difference, or otherwiſe the United States ſhould partake alſo of the ſame effect in part, as they occupy one ſide of the Atlantic. But the continent of South-America, from 44° 0' comes to be only about 400 miles broad, and far enough from any other countries not to be affected by them. Yet from 40° S. lat. it is not remarkable for its warmth; for there is not a tree large enough to make a handle for an axe from Rio Plata to the ſouthward, it being uninhabited, and a cold, inhoſpitable, barren coaſt; and on the weſt, I believe not farther than about 45°, it being unfit for cultivation, which appears to extend no farther ſouth, notwithſtanding the ſize, for which the Patagonians have been noted, who inhabit the ſouthern extremity of this continent, towards the ſtraits of Magellan, and their neighbours on Terra del Fuego, they appear all to be wandering hunters and fiſhermen, &c. and of the coldneſs of the climate, at the ſtraits of Magellan, we are well aſſured by Capt. Cook, and other navigators, &c. By this, and ſimilar facts and reaſons, we may be fully convinced, that it is not the width of the Atlantic alone, that is the cauſe of the mildneſs of the European winters; for this we muſt endeavour to find other more convincing reaſons.

In the next place we have to conſider the effects of prevalent winds and currents of the ocean. In looking over a globe, or map of the world upon a ſmall ſcale, I think upon an attentive conſideration of it, we will find a more powerful cauſe of this coldneſs, than any yet mentioned. When laſt in China, and experiencing the coldneſs of the winter there in the month of January, 1791, I was ſtruck with the ſimilarity of the coldneſs of the winters, in the eaſtern ſides of both the northern continents, and at the ſame time, the mildneſs of the European winters in the ſame latitude. I thought that ſome ſimilar cauſes, muſt produce theſe ſimilar effects.

We ſhall in the firſt place attend to the trade winds and their conſequences, before we proceed farther. Where the trade winds are not intercepted by land, they prevail all round the globe, from 30° N. to 30° S. lat. they often prevail farther, to that ſide of the line, in which the ſun is at the time: and not ſo far on the oppoſite ſide, reciprocally. This cauſes ſome local variation in their effects, at different ſeaſons of the year, as well as, on the weſterly winds, of the temperate zone; but we only intend to trace their general effects, at preſent, and their application to the ſubject in queſtion.

As the trade winds prevail all round the globe for about 60° 0′ in breadth, &c. from N. to S. in the warm latitudes, they would be regular all round the globe, from about 30° N. to 30° S. lat. unleſs where the intervention of land oppoſes an obſtruction to their regular courſe; for they never prevail regularly, within a degree of any large iſland, or continent; but the rarefaction of the air, by the heat extricated from the land, cauſes the ſea and land breezes, which prevail near the ſea coaſts, of all warm countries daily; for the air over the land, being hotter than the ſurrounding atmoſphere, in the night, air being always rarefied by heat, and condenſed by cold, is of conſequence expelled towards the ſea, until an equilibrium takes place, about eight or nine in the morning; after which the ſea breeze ſets in; and ſo they change alternately with one and another daily—this is the ſea and land breeze of warm countries; and the larger the track of land, the farther does its influence extend out to ſea. The periodical winds which annually occur in the Weſt-Indies, the Chineſe, and Indian ſeas, are owing to ſimilar cauſes, in conſequence however of the annual, inſtead of the diurnal heats, and colds; but in conſequence of the ſtrength, and long continuance of theſe winds, they prevail to a much greater diſtance from land, commonly to two or three hundred miles, but the daily winds, ſeldom more than ten or twelve leagues. But where there are many ſmall iſlands, they interrupt the courſe of the trade winds conſiderably, as in the Weſt-Indies, and among the Philippine Iſles; but as the general courſe of the wind at ſea, within the tropics, when uninfluenced by land, is from eaſt to weſt, we ſhall alſo find a general current of the ocean in the ſame direction; for all winds impel the water in their direction, although interrupted by the intervention of land. A current ſets round the Cape of Good-Hope from the Indian Ocean, and proceeding north-weſt, it is found to come again within the limits of the trade winds towards the iſland of St. Helena. The water of the Atlantic is alſo impelled by theſe winds, to the weſt from Africa towards America, where it is intercepted by the Iſthmus, which joins North and South America; and here its farther progreſs to the weſt being totally prevented, at the ſame time being forced forwards by the winds and currents from the eaſt, it muſt be conſiderably elevated above the common level of the ocean; by which means there are no regular tides in the Gulf of Mexico. From this gulf, the only way left for it to eſcape by, is between the iſland of Cuba, and Cape Florida, from whence turning to the northward, between the Bahama Iſlands, and the eaſt coaſt of Florida; it there runs very rapidly, and forms what is called the gulf ſtream; which after paſſing out of the ſtraits, takes its courſe along the coaſts of the Southern States of America, turning to the north eaſt, ſo that it is ſome leagues (about 12 or 15 from Georgia,) from the coaſt, and from Cape Hatteras; it leaves the coaſt a long way, and totally diſappears about 42° o. north, or takes its courſe ſlowly to the eaſtward, along with another current, which here appears to meet and oppoſe it; which ſetting to the ſouthward, along the coaſt of Labradore, from Hudſon's and Davis's Straits, and from Greenland, whoſe courſe and effects, we muſt preſently deſcribe.

But beſides the trade wind and the currents, cauſed by it, there are other winds of a leſs gentle nature; (for they are ſeldom interrupted, even by land, &c. whether iſlands or continents,) which prevail from 35° o. to about 60° o. both in the northern and ſouthern hemiſpheres, in the ſpace between the trade wind, and the ſtrong weſt winds, there are frequent calms and variable winds in both hemiſpheres. But in the higher latitudes, where the weſtern winds prevail, for at leaſt two thirds of their reſpective winters, moſt of the trees much expoſed to the weſt have acquired a bend to the eaſt, and have commonly more branches on their eaſt, than on their weſtern ſides by the frequent preſſure of theſe winter winds; and although theſe winds are not ſo ſteady as the trade winds, yet they are more ſo than any other winds yet known to us, and that principally in the winters of the reſpective hemiſpheres, and towards the middle of their temperate zones, where they will of courſe find the leaſt interruption. Theſe winds are remarkable ſteady and ſtrong, both in the northern and ſouthern hemiſpheres, as we have repeatedly experienced, and winds we know always carry the temperature of the parts, over which they have lately paſſed along with them, as well as ſet currents of the ocean, in that direction. We muſt pay the more particular attention to their prevalent courſes, although we allow that they often vary, but are moſtly from the weſt. Theſe weſtern winds in high latitudes, are not near ſo complicated as the tropical winds are, nor interrupted with ſo many other periodical winds; but, on the other hand: we have not yet been able to find any regularity in the variable winds, either as to their periods, their cauſes, nor any other rational connexion of facts, or circumſtances by which to trace them, neither do we conſider this, as in the leaſt affecting our principles; much leſs have we any means in our power to foretell their changes.

Towards the poles, and particularly within the polar circles, the wind blows moſtly from the poles, and carries large maſſes of ice with it, as yearly happens in high latitudes, both north and ſouth. But we have not yet ſufficient data, to prove whether this continues the whole year round, or only on the approach of the ſun, in ſummer; for although air, rarefied by the heat of the ſun, will force its way againſt more cold and denſe air; yet as as ſoon as it is deprived of its heat, it muſt contract, and the denſe air muſt force back to ſupply the vacuum; but denſe air would always force rarefied air before it, were they left in equilibrium, it being ſo much the heavieſt of the two.

We have now traced the moſt prevalent winds and currents. In the next place we may examine their phyſical effect, and modes of operating; we are well aware, however, that innumerable partial objections may be made. But it is only the general laws, and modes of action, that we can attend to here, remembering however, that they have been the reſult of innumerable obſervations, made at different times, in various parts of the world, as opportunities offered.

It is commonly obſerved, that wind blowing over a high mountainous country, is always colder, particularly to the eaſtward of them, than when it comes over a low, flat country. Therefore mountains are great ſources of the coldneſs of the air; not by the air over them being rarefied, any more than it is at the ſame horizontal height any where elſe; but by their cauſing a mixture of the air, by the various directions into which they turn its currents, mixing the cold air above, with the warm air below; for the warm air has a tendency to aſcend; and by their attracting lightning or electric fire, from the atmoſphere, and thereby cauſing rains; becauſe this active fluid, as well as heat, is a mean of keeping the water ſuſpended in the air. Mountains alſo, by reaſon of their elevation above the horizon, the ſource from whence the ſun's rays extricate heat, muſt on that account be colder than low plains, as their atmoſphere muſt always be more diſtant from the common ſurface, they being projected points of the earth; although the greateſt of them, yet known, bears no greater proportion to our globe of earth, than the breadth of a hair, to a globe of ſix feet diameter; but they are always in contact with cold air. An elevated country alſo, is always cold, as it is obſerved in Quito, in South America, and in Mexico; but greateſt of all in Siberia, where there are the moſt exceſſive colds hitherto known; was it not very elevated, the heats of the ſummer muſt be great, becauſe this is in the middle of the largeſt continent in the world, which in all ſuch ſituations muſt be conſiderably elevated, to allow a deſcent for the water to run off, or otherwiſe it muſt form lakes, &c. But here is an elevation of a track of country, as Mr. Kirwan ſays, of 500 miles, from north to ſouth, and 1500 from eaſt to weſt, which is not equalled in any other part of the world. This we will find to be a great cauſe of the coldneſs of the eaſtern parts of Aſia, &c. So that in the mountainous country of Boutan, the Engliſh ambaſſadors, who have gone from Calcutta, to the court of the Grand Lama, found ſevere froſty weather in lat. 28° 0, in the month of September; ſo that in aſcending a few miles, they changed the burning heats of Bengall, for a continued froſt. When air is very clear, the ſolar rays extricate no heat from it; and when much rarefied, it retains very little heat, for the focus of a burning lens, or a mirror, cauſes no heat in the air, if it meet no other reſiſtance from an opaque body; hence the coldneſs of elevated ſituations; this may be one reaſon for the temperature of the air on the weſtern part of Europe, for it is more opaque, hazy, and cloudy, than any other place we know, the banks of Newfoundland excepted. In the production of which laſt phenomena, the gulf ſtream meeting with, and being oppoſed by the cold ſtream, or current from the coaſt of Labradore, together with the cold air with which it is accompanied, is a very evident cauſe, as the evaporation from warm water is always moſt viſible in a cold air; the meeting of theſe two currents here, is alſo a probable cauſe of the formation of theſe banks, and of the immenſe quantities of fiſh, with which they abound; for where currents are ſtopped, they commonly depoſit ſediments, as may be obſerved at the mouths of all great and rapid rivers; and theſe are always well ſupplied with fiſh, for there they find their food in ſmaller fiſhes, or inſects. With reſpect to temperature, it is to be obſerved that Europe differs more from every other part of the world, than America does; for there are other countries in the ſame latitudes, as cold as any part of the United States; as China, Corea, and Tartary; which are ſimilarly ſituated, with reſpect to the continents, and the ocean. But the weſtern part of America, which is ſimilarly ſituated with reſpect to Europe, or on the weſtern ſide of the continent, although approaching much nearer to it in temperature, than any other part of the world: ſo far as to about 50° N. where the Pacific ocean retains its breadth; yet it is conſiderably colder than Europe, even there, as we may judge from the imperfect accounts, which we have from navigators. But to find the ſtandard temperature of the ocean, uninfluenced by land, by currents, or winds.—The great South Sea, and the Pacific ocean, would certainly give the faireſt eſtimate, and even there, the ſouthern parts of America, towards Cape Horn, are rigorouſly cold at 50° S. lat. in the winter, and ſo are all the iſlands, even as low as 40° S. as Van Diemen's land, New-Zealand, &c. and at Cape Horn, lat. 57° the cold is exceſſive in their winters, and only tolerable in ſummer. After repeated trials, all round the polar circle, Capt. Cook could only in one place S. W. from Cape Horn, penetrate above 70° of lat. in the ſame latitude in which he was ſtopped to the northward of the ſtrait which ſeparates Aſia from America; this ſhews a great ſimilarity in the temperature of the northern extremity of the Pacific, and the Southern Ocean. But why the eaſtern ſide of the Atlantic, and the neighbouring part of the continent and iſlands of Europe, ſhould be as warm 10° or 15° farther north, remains yet to be explained. The northern part of the Atlantic is navigable to 81° or 82° every year; and the continent of Europe is inhabitable to 70° north; for there is a town in Lapland, and no doubt ſome agriculture, in the Swediſh territories, very near that latitude, and ſeveral in Norway, beyond it, where they have ſeveral weeks of night, and as long of day, yearly.

We have already traced the trade winds, and the great prevalent currents which are cauſed by them, particularly that moſt remarkable of all currents, the Gulf Stream.—Although we have traced the ſtrong weſtern winds which prevail in the temperate zone, we have not yet inveſtigated their effects on the temperature of the land or ſea, or the currents of the ocean, &c. Theſe winds are found to prevail in both hemiſpheres, eſpecially in their reſpective winters, every where above 35° of lat. north and ſouth; and as it is known that winds always carry a part of the temperature of the countries, over which they have paſſed along with them; they alſo direct the currents of the ocean, and elevate the water of lakes, bays, or ſeas, on thoſe ſhores towards which they blow.

We are next to examine their effects, and endeavour to trace their laws; but their cauſes we cannot yet inveſtigate—theſe we ſhall leave, until farther examination, with the Author of all natural cauſes and effects. There is a remarkable difference in ſeveral reſpects to be obſerved, between the two ſides of the Atlantic; we have never ſeen, or heard of any maſſes of ſea-ice on the coaſts of Europe, but winds which prevail in the polar regions, aided by currents which ſet in the ſame directions, along the coaſts of Greenland, and from Davis's and Hudſon's ſtraits, carry large maſſes of ice with them, which every year, in the ſpring, and early part of the ſummer, are obſerved in numbers ſetting to the ſouthward, with a current along the coaſts of Labradore and Newfoundland; and diffuſing a ſevere coldneſs to great diſtances about them. But as Newfoundland projects conſiderably from the continent, and forms an angle with the direction of it, north and ſouth, they are not found near the coaſts any farther to the ſouthward; we find their effects however very evidently, every year in the northern ſtates, and even ſo far to the ſouthward as N. Carolina; for it is obſerved yearly in the ſpring that the N. E. winds are remarkably cold and moiſt, and the air very denſe, cloudy and hazy: all the old inhabitants of the maritime parts of the country, are well acquainted with this circumſtance; and ſtrangers ſoon learn to remark it, from its very uncommon appearances. Something ſimilar often happens in Iceland, in the ſpring of the year, but to a much greater degree; for there, when the ice arrives in great quantities, their cattle are ſometimes ſtarved, through want of food, as well as by the exceſſive coldneſs which is diffuſed all over the iſland; and the white bears, which live on the ice, and on Greenland, arrive in great numbers, and deſtroy their ſheep, and cattle, until the inhabitants kill them; but this does not happen every year, even in Iceland—theſe vaſt maſſes of ice, not arriving in equal quantities every year, although it is but little more than 100 miles from Greenland, in one part, about 66° N. lat. But what is moſt remarkable is, that although the ice floats down the weſtern parts of the Atlantic, ſo far as lat. 42° in ſome years; yet it is never obſerved to take its courſe along any part of the coaſt of Europe: for we never have had any information of its being ſeen, even on the coaſts of Norway. But if we cannot find the reaſons for theſe phenomena, immediately in the winds; we hope to be able to find them in the currents, of which the winds are the active cauſes.

If we will turn our attention to the eaſtern ſides of the two northern continents, we ſhall find an amazing ſimilarity in their temperatures; for even at Canton, 23° 20′ N. lat. We well remember the pinching cold of January, and every one who has been there in the winter, muſt have remarked the ſame. On conſidering the ſimilar ſituations of China, and the United States, with regard to their reſpective continents; we conſequently ſuppoſed that there muſt be ſome general cauſe for this ſimilarity, if we could only find it out; but this cannot be cauſed by woodineſs, or want of cultivation; for no country in the world is better cultivated, or contains leſs wood than China, which extends upwards of 1000 miles to the north of Canton, the direction in which the coldeſt winds come: for there is not wood enough for domeſtic purpoſes; and even Tartary, although not well cultivated, is by no means a woody country, by the accounts we have of it; Kamſchatka is in the ſame latitude with part of Newfoundland, 50° N. and the ſimilarity in the climate, and productions, are remarkable, even to the dogs, for beaſts of burthen, becauſe they cannot afford vegetables, for larger animals, as horſes, or bullocks, &c. for theſe dogs live chiefly on fiſh, &c. in both countries; and many other cuſtoms, as remarked in Cook's voyage, are common to both of them; ſo that there is a very great ſimilarity of temperature between the two countries: and Corea is very ſimilar to N. England; and eaſtern Tartary to Nova-Scotia, Canada, and Labradore. And in ſhort, all along the eaſtern parts of both theſe continents, they are amazingly ſimilar in their reſpective temperatures.

And again, if we direct our attention to the weſtern ſides, of both theſe continents, we ſhall there alſo find a remarkable ſimilarity, ſo far as to about 50° N. lat. or there about; or ſo far at leaſt as the Pacific ocean preſerves its breadth; for even here, it is narrower than the Atlantic, as 1300, is to 1500 miles. Although to the ſouthward of this, the Pacific is much the wideſt, but to the northward, it contracts rapidly, about 55° N. and at

60° it takes the form of a ſtrait, which at 66° is only 14 leagues over, from Aſia to America: here, and indeed almoſt all to the north of 60° we cannot expect any great difference of temperature, between the two ſides of this ſea; but the Atlantic keeps broad and open, ſo far as we know, and perhaps to the pole; and is not leſs than 700 miles wide, in any place. This muſt have conſiderable influence; but we are to remember, that in the Antartic ſeas, although we know of no continents, &c. yet they cannot be penetrated, farther than the 71ſt degree of latitude, but the Atlantic to the 82d; ſo that we muſt find ſome other reaſon than the breadth of the ſea, or the abſence of land alone. When Capt. Cook was at Nootka Sound, he, and others of his companions, were ſtruck with the mildneſs of the climate, when compared with the eaſtern ſide of the ſame continent; and Capt. Cook was well acquainted with the oppoſite coaſts of Labradore, and Newfoundland, for he had been ſeveral ſummers on that ſtation, and drew charts of the coaſts.

We come again to take a view of the currents, in the northern parts of the ocean, their cauſes and effects on the temperature of different countries; but in the firſt place, we muſt recapitulate thoſe currents cauſed by the trade winds, and their effects in various places. Theſe winds prevailing all round the globe, cauſe currents in the ocean, which extends, as we have ſhewn, in many parts, far beyond the limits of the winds; for they prevail near many coaſts, where the trade wind never reaches, both to the ſouthward and northward; now in conſequence of the winds, in the Indian ocean, there is a conſtant current, ſets paſt the Cape of Good Hope, and the ſouthern parts of Africa, from eaſt to weſt; for the trade winds in the Pacific ocean, ſets the ſurface of it in motion to the weſtward; ſo that between the ſouthern part of the continent of Aſia, and the main land of New Holland, there is a conſtant current ſets to the weſtward through the eaſtern iſlands; but it is ſtronger both here, and on the ſouthern part of Africa, at ſome times of the year, than at others; but never prevails in the oppoſite direction from weſt to eaſt; but from India, towards

Africa, there is always a ſlow current, within the limits of the trade winds; and at the Cape it often runs rapidly, even againſt ſtrong ſtorms from the weſtward; for in this direction we have been carried paſt the Cape, at the rate of two miles an hour, againſt the wind, when lying to, which is a clear proof of the force of the ſteady trade winds againſt uncertain ſtorms, &c.

From the Cape, towards the iſland of St. Helena, there is always a current, which is one reaſon, why that iſland is often paſt, or overſhot in the night. By this courſe the waters of the Indian ocean find their way into the Atlantic; but the trade wind prevailing here alſo, ſets the waters of the Atlantic in motion to the weſtward; or from the coaſts of Africa, towards America, where being intercepted in their courſe, that part which is to the ſouthward of Cape St. Auguſtine, in Braſil, about the ninth degree of ſouth latitude, is divided by this moſt eaſtern part of America; that part which is to the ſouth of this takes its courſe ſouthwardly, along the eaſtern coaſt of South-America, all along which it has been traced, and even through the ſtraits of Magellan, and into the South Sea, and probably paſt Cape Horn. But that part of the current of the Atlantic, which is northward of cape St. Auguſtine, is totally intercepted by the American continent, and by the direction in which the continent is, the current takes its courſe towards the gulf of Mexico, where it is in a manner dammed up by the continent of North America, ſtopping its progreſs to the north-weſt, and the trade wind behind, forcing it forward. Here we may obſerve that there can be no doubt but the water of the gulf is ſeveral yards higher than that of the South Sea; and that the water of the Red Sea, is alſo higher than that of the Mediterranean; upon ſimilar principles: the water being forced in that direction from the eaſt; but this was a prevailing opinion, in very ancient times.

The direction of the weſtern coaſt of Africa, would ſeem to direct the current of the Atlantic towards the gulf of Mexico, alſo; where being pent up, it has no other way left to eſcape but paſt Cape Florida, between which and the iſland of Cuba, it forces its way; and having paſſed this cape, it bends its courſe to the northward, between Florida and the Bahama iſlands, from whence it ſtands on, to the northward, along the ſouthern parts of the United States, from whence it takes a north-eaſt direction, until it vaniſhes about lat. 42° N. towards the banks of Newfoundland, there is no doubt but it is a very great cauſe of the fogs which prevail on theſe banks; together with the cold air which it commonly meets with here; as alſo another current which ſets ſouthwardly, along the coaſts of Greenland and Labradore, from Davis's and Hudſon's ſtraits, &c. and both will certainly co-operate in cauſing the uncommon fogs met with here. Theſe two currents intercepting each other, are ſuppoſed with great probability, to accumulate the ſubſiſtence for the immenſe numbers of fiſh, which are found here, in the ſame manner as banks are formed; and large quantities of fiſh are found at the mouths of all great rivers, where their currents are intercepted by the ſea, &c.

Although the Gulf Stream runs in ſome of its moſt rapid parts, between the Bahama Iſlands and Florida, between two and three miles an hour, to the northward of that ſtrait, it runs ſlower, and ſpreads wider, to about 40 or 50 miles. It is very evident that this water forcing its way from a warm to a colder climate, will carry much of its heat with it, into the colder parts of the Atlantic, as has been ſatisfactorily proved by Dr. Blagden; and although a part of it which is moſt ſouthwardly, and in which that ſubſtance called the gulf weed floats, returns again to the ſouthward, and performs a circular courſe back again into the gulf; yet the far greateſt part of it takes a different courſe, and is driven by the weſt winds towards the northern coaſts of Europe; for there are ſeeds of vegetables found yearly on the weſtern iſlands of Scotland and Ireland, which are produced in the Weſt-Indies alone; which is a convincing proof that the waters of the Gulf Stream alſo take their courſe in that direction, and we ſhall find that they have a great ſhare in moderating the coldneſs of the European winters, but particularly in preſerving the mild temperature of the northern parts of the Atlantic, which is clear of ice upwards of 10° farther towards the pole, than any other ocean or ſea in the world; for here are two phenomena, with which we are acquainted, not found in any other part of the world—the gulf ſtream, and the mild temperature of the Atlantic: for we ſhall find on inveſtigation, that a current ſets to the northward, along the weſtern coaſts of Ireland and Britain, towards Norway, and the North Cape, and by this means preſerves the warmth of theſe ſeas; ſo that Europe is under many more obligations to America, for her mild winters, than it was formerly thought ſhe was: particularly to the iſthmus of Panama. But how it happens, that the gulf weed ſhould ſo univerſally take its way to the ſouthward, is another conſideration.—It may be impelled by a law of the motions of ſubſtances floating on water, ſimilar to that which we often ſee takes place in rivers, or other ſtreams of water, wherein the lighter floating ſubſtances are collected together; but however it is brought about, it is certain that the Gulf Stream, aided by another circumſtance which we are to mention preſently, is the cauſe of the temperature of the north-eaſt part of the Atlantic, being ſo very mild above all other ſeas in ſimilar latitudes. This is a phenomena which has ſcarce ever been attempted to be explained; but we have no doubt but this explication will prove ſatisfactory; for although cultivation has been allowed, to make the temperature of the land milder in Europe, yet that was never even ſuggeſted to extend its influence far into the ocean.

The Atlantic, we ſee, keeps broad and bold, quite away to the north pole perhaps, or to eighty one; as it has been explored ſo far by the whale fiſhers; whereas the Pacific ocean is contracted at about 66°. 0. north, to a narrow ſtrait of fourteen leagues between the continents of Aſia, and America. Now let us begin our courſe with the weſt winds in the Atlantic, where theſe winds are rendered mild, by paſſing over this great body of fluid water, and receiving part of its heat, from the agitation which it cauſes in the ocean, for it comes upon the Britiſh iſles, as mild as it left the great ocean; ſo that they have the mildeſt winters of any, and next the continent of Europe, which is ſo mild as to be habitable to near 70. 0°. north, and ſertile countries, and populous, with large cities to above 60. 0°. this muſt be from its vicinity, to the weſtern breezes of the Atlantic; now theſe winds hold on their courſe to Siberia, and all that northern country of Tartary: But China being on the very eaſtern ſide of the old continent; the weſt winds muſt paſs all over the continent of Europe, and Aſia, before they can reach it; and are therefore much cooled by the frozen regions of great extent, over which they paſs, as this is the greateſt body of land in the world; of courſe, the rigor muſt be increaſed in proportion, from the cauſes we have already mentioned, and therefore the eaſt ſide of the old continent, is ſo very cold, as to be ſcarce habitable to 50°. 0. north. As the countries to the northward of Corea and Kamſchatka, and all along the eaſt ſide of the continent, are as cold in the winter, as it is in ſimilar latitudes, in the eaſtern ſide of the new continent, and ſomewhat more ſo; for the Empire of China is much colder, than the ſame latitudes in the United States of America. At the city of Pekin, the cold of their winters are greater than theſe of Philadelphia; and ſo likewiſe are the heats of their ſummers, greater at Pekin; ſo that both extremes are greater. In the ſame parallel the colds and heats are both greater, where they may be leſs influenced by the ſea, and its temperature, in the interior parts of the old continent, the winters are as cold at Canton, latitude 23, 20. as at Charleſton, lat. 32° 45'.

It is known to be very cold in Siberia, but it is a very elevated ſituation, of great extent; the winds of this country are thought to cool their neighbourhood; particularly to the eaſtward of them for a great extent, by reaſon of the moſt general prevalence of weſt winds, in all high latitudes, in their reſpective winters; indeed the interior parts of all continents are generally the higheſt, and of courſe the cooleſt, unleſs covered with lakes, &c. for as they recede from the ſea, they muſt of neceſſity riſe higher to give a ſufficient degree of fall to rivers, to diſcharge their waters.

Let us again begin with the weſtern winds, on the old continent, and follow their courſe, and trace their effects, from weſt to eaſt, all round the northern hemiſphere; they approach the weſtern coaſts of Europe, from the Atlantic, mild and temperate, but as they advance, continuing their courſe to the eaſtward, over the continent; the weſtern winds being more prevalent than any other; towards Aſia, they become more rigorous, from the extent of elevated and frozen countries over which they paſs, even in the ſame parallels of latitude, partaking more of the cold of winter, the farther they continue their courſe over the land, by which means, beſides the elevation of the interior, middle, and eaſtern parts of the continent; the difference becomes the more perceptible, the more we advance to the eaſtward; and by the time it has reached the Aſiatic part of the continent, its temperature is found to be much changed, as we learn from thoſe who have reſided at Moſcow, and other parts in Ruſſia. Now it continues on its courſe acroſs the northern parts of Aſia, ſtill increaſing in its coldneſs, until at Siberia, and the Tartar countries ſouthward of it, it meets with a very elevated country, in the middle of the greateſt continent on the earth, and conſequently, far from the ſeas, either eaſt or weſt of it; and here all the known cauſes of coldneſs concurring; we find of courſe the greateſt cold hitherto known in the world, ſo as to congeal mercury in the open air, which requires 39°. below 0. on Fahrenheit's ſcale; that is 71°. below the freezing point. Theſe cold weſtern winds ſtill continuing their courſe, for by far the greateſt part of the winters, to the eaſtward they carry part of this exceſſive cold along with them, and thereby cauſe the great coldneſs obſerved on the eaſtern parts of Aſia; and according to Mr. Kirwan, a few days prevalence of a north eaſt wind, even in England, in the winter, often cauſes an extreme cold there, from the ſame ſource; for in the courſe of three days, it may travel from Siberia, to England, at the rate of 30 miles an hour, ſo that was the wind in theſe latitudes, to be as much from the eaſt, as it is from the weſt, the weſtern parts of Europe, would be rather colder than the eaſtern ſide of North America—And eaſtern winds of ſome weeks continuance in winter have ſometimes cauſed exceſſive hard froſts on the weſtern coaſts of Europe, and in Britain, and Ireland. But to return to our ſubject.

All the eaſtern parts of Aſia, even to the ſouthern extremities of China, being cooled by theſe winds, even Japan, is affected by them; the difference between the temperature of the winters in Canton, and Charleſton, (South Carolina) is in general but very ſmall in compariſon of their difference of latitude, as the author has experienced; but altogether there appears to be a very great ſimilarity in their temperature, and the ſudden changes of the weather, eſpecially in Autumn; between China and the United States; but to the ſouthward of 50°. north latitude, the Pacific ocean becomes very wide, and of courſe the winds loſe much of their coldneſs in paſſing over it; and the weſtern coaſt of America enjoys a conſiderable temperature from that to the ſouthward; but to the northward it is more cold in proportion, eſpecially about the ſtraits in 65°. N. lat. but ſo far as Cook's river, in 60°. it is certainly not ſo cold as the oppoſite coaſts of Aſia, or the eaſt coaſt of America, for there Captain Cook repaired his veſſel, and there is mention made of cutting down timber on ſhore, which would be difficult to find on the eaſtern ſides of either continent, in that latitude; and at Nootka-Sound, they found abundance of vegetation, &c. even in lat. 50°. but about the ſtraits, between the continents the temperatures cannot be very different on either ſide, although it is different, from 60°. to the ſouthward. And the weſt winds progreſſing on along the northern part of the American continent, paſſes over that large and unknown track, to the weſtward of Hudſon's bay; and the lakes again traverſe a high, mountainous and marſhy country, but a little inferior to that of Siberia, for coldneſs, ſo that by the time it approaches this bay, and the north-weſtern lakes, &c. its coldneſs is again exceſſive, ſo that Mr. Andrew Ellicot, in his late expedition as commiſſioner, to determine the Spaniſh boundary, found it for ſeveral days together, with a north weſt wind, from 4°. to 7½°. on Fahrenheit's Thermometer, at the junction of the Ohio and Miſſiſippi, in latitude 37°. but the weſtern wind paſſing on towards the Atlantic ſtates, loſes ſomething of its ſeverity in paſſing over the great lakes, which are ſo large as not to be ſufficiently cooled to freeze by the continuance of any one winter, only about their borders, and the ſtraits between them; which although it is very cold in the northern parts of the United States, would certainly be much more ſo, did not theſe large bodies of water intervene to the north weſt. So that in the United States, the north weſt winds are the coldeſt in winter, and all winds from the north to the weſt are remarkably cold, but nevertheleſs there are other parts of the world, particularly in the ſouth eaſtern parts of Aſia, as in Boutan, and China, much colder in the ſame latitudes, and certainly more ſo in eaſtern Tartary.

Now we are to trace the weſtern winds of the winter ſeaſon, acroſs the Atlantic, where they are moſt generally known to prevail, by reaſon of ſhips from America, commonly making their paſſage to Europe, in one half the time that they are in returning. The north weſtern winds are well known to navigators on the coaſt of North America, but they become milder the farther from the coaſts; ſo that by the time they arrive on the coaſts of Britain, and Ireland, they are by far the mildeſt winds in the world, in ſuch high latitudes, as theſe iſlands, particularly; and the neighbouring countries, exceed every other, in ſuch high latitudes, in the mild temperature of their winters, although they are all upwards of 50°. north, they are much milder than many others are at 40°. A part of this extraordinary phenomena, muſt be attributed to the Gulf Stream, which certainly contributes alſo to the warmth of the Southern States of America, ſo far as 35°. north, and carries its heat with it far north into the Atlantic; for when it meets the northern current, at the Banks of Newfoundland, it is turned to the eaſtward; this is demonſtrated every year by its carrying the ſeeds of vegetables with it, which are only produced in the Weſt India Iſlands; and are found yearly caſt on ſhore, on the weſtern iſles of Scotland, and other parts; for although part of the Gulf Stream, and ſea-weed, perform a circular courſe, and return to the Weſt Indies, the greateſt part of the water of it appears to take the northern direction, and contributes to form a current of warm water along the weſtern coaſt of Ireland, and Scotland, and from thence to Norway, which extends to latitude 71°. and is inhabited thereto; and is loſt in the North Sea, which it is the only probable cauſe for preſerving navigable to 81° or 82°. of latitude, and to it alſo, there cannot be any doubt that Europe is in a great meaſure obliged for the mildneſs of her winters, for the Gulf Stream, has no equal in the other parts of the world, nor has Europe any equal in the temperature of her winters; but this deduction is, we hope, ſufficiently founded on facts; and the more of them we collect, the firmer it appears to be ſupported.

Now we have finiſhed a ſurvey of the globe, and remarked the various cauſes, of either cold or heat on its ſurface, it may be agreeable to our readers to have a concluding recapitulation of the different cauſes already ſtated, with their conſequences.

We hope it will be granted that the defect of numerous inhabitants, and conſequently want of cultivation, and the great quantities of woods, cannot be the cauſe of the coldneſs of the winters; and the lakes which have been aſſigned as being acceſſary to the coldneſs, muſt on the contrary, be allowed to be the very reverſe; and as for the height of the mountains, or of the ſurface of the continent of North America, it does not appear to be conſiderably higher above the ſurface of the ocean, than that of Europe. But even allowing that any of theſe reaſons were of ſome importance, we have, on compariſons with other parts of the world, it is hoped, given ſatisfactory reaſons for their inſufficiency, to produce the great difference between the temperatures of Europe and America, in particular; and that other cauſes were to be ſought in order to carry conviction; and theſe we have endeavoured to find, in the prevalent winds, and in the currents of the ocean, of which the winds are the cauſe.

As to the trade winds they are generally known, and the currents cauſed by them have been often taken partial notice of; the Gulf Stream in particular, is ſo very remarkable as not to eſcape attention; but the prevalent northern winds, and currents, have not been ſo generally attended to. Although we find them very material cauſes of the difference of temperature, which prevails between the eaſtern and the weſtern ſides of the Atlantic, in its northern parts, and alſo in the Pacific Ocean, in a leſs degree; and likewiſe the difference in the temperature, between the eaſt and weſt ſides of the northern part of the old continent; they being as different, as the two ſides of the Atlantic; and the eaſt and weſt ſides of North America, differ as much as thoſe of the Pacific Ocean, do from one another.

In theſe we have deduced the reaſons for all the varieties of temperatures, and we have alſo endeavoured to prove that the temperature of Europe, and that of the Atlantic, in its neighbourhood, is peculiar to that part of the world, no other in ſimilar latitudes, enjoying a temperature ſo mild, although the weſtern ſide of the American continent, comes the neareſt to it, in this reſpect. We have inveſtigated the reaſons for their agreement, and alſo thoſe for their difference; the firſt being in the ſimilarity of their ſituations, with reſpect to the continents, but the other in the reſpective differences of their neighbouring oceans, as to breadths and currents: their temperatures in their eaſtern parts, differing very conſiderably from each other.

The ſouthern hemiſphere we conſider as affording the moſt regular ſtandard of heat, or cold, for the different latitudes, as it is the leaſt interrupted by land, or currents: and there we find the boundary of perpetual froſt, in as low latitudes as in the northern part of the Pacific, neither of which have been penetrated beyond 72°. lat. but the Atlantic is commonly navigable to latitude 81°. and it is the only part of the world, where there are navigable ſeas to be found in ſuch high latitudes. We are accordingly led to inveſtigate the cauſes of this difference, which appears ſo great and obvious, between this part of the Atlantic, and every other ſea hitherto known. The temperature of the European Seas, we find to correſpond with that of the continent, and the iſlands in their neighbourhood, and both to be derived from the ſame ſources, viz. prevalent winds and currents; the number of inhabitants, or the progreſs of cultivation, which together with the clearing of the countries, muſt be in proportion to the mildneſs, or the ſeverity of the climate, and of courſe, it is rather a conſequence, than a cauſe of the mildneſs of Europe. But we have alſo adduced ſufficient proofs, that the temperature of theſe oppoſite countries is not confined to the land only, but that it prevails out at ſea alſo, many hundreds of miles from the coaſts.

We have alſo demonſtrated from the premiſes, that the breadth of the American continent to the northward, cannot be a cauſe of great coldneſs, for in the ſame latitudes in other parts of the world, Europe alone, excepted, there is a perpetual ice; and whether the ſurface of the globe, is covered with mountains of ice, or of land, is but a matter of indifference, in reſpect to the temperature, unleſs what is the effect of elevation: neither can the narrowneſs of North America, in the warm latitudes, be any probable cauſe of the coldneſs of the winters, for it does not even cauſe any defect of heat in ſummer; and although moſt part of South America is within the tropics, yet its ſouthern extremity is ſo cold, as to be ſcarcely inhabitable, or capable of cultivation, farther to the ſouth, than North America, is to the northward, that being to about 45°. or 50°. Although there the extent of land from eaſt to weſt, is only three or four hundred miles, and no other land near it in either of theſe directions, and but little to the ſouthward of it; ſo that this would appear to be a good place, to fix a ſtandard temperature for land, we muſt acknowledge that the great chain of the Cordillera mountains, cauſes a coldneſs to the eaſt of them in high latitudes particularly, as they do in the northern hemiſphere; but we know that the influence of mountains does not often extend very far, eſpecially to the northward, or ſouthward of them, the wind not being often conſtant in thoſe directions: in high latitudes Mr. Kirwan remarked, that it was always colder to the eaſtward of mountains. The burning heats of Bengal, are within one degree of the pinching cold country of Tibet. But the ſouthern hemiſphere, in general, from latitude 35°. towards the poles, appears to be colder than any part of Europe, but very nearly the ſame as the eaſt coaſt of North America; but it would appear that the northern, and ſouthern parts of the weſt coaſt of America, alſo, reſemble each other in their reſpective temperatures; but if there are any difference the northern may be the mildeſt, by all the accounts we have of them; the ſouthern part of New Holland, and New Zealand, alſo, are very cold, in compariſon with ſimilar latitudes, and inſular ſituations in Europe; but very near the ſame as in all other parts of the world, reſpectively.

With reſpect to the temperature of different climates, we hope that ſufficient reaſons have been given, every part of which is the product of experience, and may be found confirmed, in the moſt authentic accounts of late voyages and travels. Europe appears to differ in its temperature, from all other parts of the world; that which appears neareſt to it, is the weſtern coaſt of North America; but all other parts of the world, appear to agree amongſt themſelves. The European ſide of the Atlantic ocean, is ſimilar in temperature to the neighbouring countries, but different from all other ſeas in ſimilar latitudes; ſo that the mildneſs of the European winters is not to be expected in any other part of the world, in ſuch high latitudes; and this we have endeavoured to prove, is not owing to accidental but to permanent phyſical cauſes, and does not depend on the numbers, or the induſtry of the inhabitants; or if it did, China ſhould far exceed it in the mildneſs of the winters.

We may now turn our attention to the extent of the change, which the climate of any country may undergo, from the increaſe of the number of inhabitants, and conſequently of cultivation. This may form another ſubject of inveſtigation, although cloſely connected with the former. On this ſubject, it may be remarked, that we have no accurate regiſters of the temperature, of the ancient countries—their eſtimates being made according to their ſenſations; ſo that we muſt depend on other circumſtances, for our eſtimates of it, and we may obſerve alſo that we are very apt to be deceived by exaggerations. Dr.

Williamſon, and the Abbe Man, are the only writers who have hitherto fell under our notice on this ſubject; the latter follows the former in every particular, but collects a great many more paſſages from the ancients, in confirmation of the coldneſs of the winters, in every part to the northward of 44° being as rigorous as it is at preſent in Norway, Lapland, and Hudſon's Bay: but neither of their accounts appears to take notice of the warmth of the Atlantic; but notwithſtanding all the ſurmiſes taken from the exaggerated accounts of poets, and others, who are very apt to attend only to the extremes, in their relations, reſpecting other countries; if we are to form our judgment of the temperature of the ſhores of the Baltic, from the number of inhabitants, and of cattle, which theſe countries ſupported in very early ages, the inhabitants of which appear to have had large flocks of cattle; thoſe countries which produced the numerous hoards, of the Vandals and Goths, were certainly very populous, long before we have any hiſtorical accounts of them; for ſo noted were the ſhores of the Baltic, for producing inhabitants, that they were proverbially named the *officina gentium*, or the *manufactory of nations;* very different from the countries about Hudſon's Bay, at any time, &c.

But although the effects of cultivation, and the number of inhabitants, of fires, and domeſtic animals, in ameliorating the climate of any country, muſt be allowed its due weight, yet we have no reaſon to think, that it could produce any ſuch difference, as exiſts between Europe, and every other part of the world. Even from the S. W. coaſt of America, which comes neareſt to it in temperature. The cultivation of China has produced no alteration, ſo far as we can learn, in the temperature of the moſt ſouth-eaſtern part of the empire, although its extent from thence to the north-weſt, is upwards of 1000 miles. It is true, both vegetables, and animals can be accommodated to a colder temperature, than their native climates, by habitual uſe; but although vegetables can be habituated to a colder climate, than their native countries, that is no proof of the increaſing mildneſs of the weather. Dr. Barton, who appears to have employed much ſearch and conſideration on the ſubject of tranſplanting, and habituating of vegetables to colder climates, than thoſe where they have been ſpontaneouſly produced; thinks, that he has ſufficient documents to prove, that there are few plants which may not be habituated to any climate, without any change taking place in the temperatures; ſo that this is no proof of a change. The idea of the increaſing mildneſs of the weather in Europe, has commonly been attached to that of its comparative mildneſs at preſent, when compared with other countries ſituated equally diſtant from the equator, either north or ſouth; the one ſubject of inveſtigation, is certainly cloſely connected with the other; but we are at the ſame time, fully convinced that the difference of temperature, between Europe, and other quarters of the world, does not depend on this circumſtance alone. It was very natural for Europeans, on their firſt coming to North-America, to exaggerate in their accounts of the coldneſs of the winters, becauſe they had been uſed to very mild ones at home; and although it is highly probable, that ſome ſmall changes have taken place in the neighbourhood of the Delaware, or Hudſon's River in America; yet from the moſt authentic accounts, which we can collect, it is not much changed, either here, or any other place, to the northward, or ſouthward of this; for all the large rivers ſo far ſouth as James's river, are often frozen, and it has been frozen down to City Point of late years; but clearing of woods, and cultivation, can only act partially, and be of partial advantage in any country: clearing makes way for the ſun to act on the ſurface of the earth more freely; whereby ſome heat may be extricated, which may be a mean, as ſuggeſted, of moderating the coldneſs of the winters; but it ſhould alſo be remembered, that when the ground is cleared and cultivated, it is not left totally without defence againſt the ſun's rays, which are ſources of heat, as well as light, for vegetable productions of various ſpecies, are cultivated, which ſerve as a partial defence for it. Wet ſummers alſo have been ſaid to be ſucceeded by cold winters; but was the cold of the winters to depend on the quantity of rain which falls, and of cloudy hazy weather, Ireland and Britain, ſhould be the moſt froſty and cold, as they are the moſt rainy countries we know of; for certainly theſe, which are by far the mildeſt of all countries in the world, with reſpect to their latitudes, do not depend upon the rays of the ſun, in any time of the year for it; for we believe there are ſcarcely any other parts of the world, which enjoy leſs of them, than theſe European iſlands; ſo that from all the information we are able to collect on this ſubject, the cauſes of the mild temperature of Europe, is not accidental, or dependent on the ſuperior cultivation, or the number of inhabitants, which are actual conſequences of the original mildneſs of the climate; for we have no reaſon to doubt, but that the cauſes of this mildneſs, are to be traced to innate phyſical principles, which have been in action ever ſince the formation of the world; or at leaſt ſince it aſſumed its preſent form: and theſe principles we have already endeavoured to trace, from the prevalent winds, and currents of the ocean. Perhaps tracing the ſubject farther, would be more to the taſte of ſome of our readers; but the preſent eſſay was the reſult of the amuſement of ſome hours of relaxation, from more abſtruſe ſtudies—If it meets with that approbation from the world, which it has already in part received, from one philoſophical body, the ſubject may be proſecuted to a greater extent in future; as this is only offered as a ſpecimen, of what may be conſidered a new mode of inveſtigation in phyſical geography; a ſubject, which certainly deſerves more attention than has hitherto been paid to it.

But as the wiſe laws of Providence have impelled the author, through curioſity, or from other motives, to viſit many different climates, and countries, and as his employment has always afforded him time and opportunity, for both obſervation, and reflection, he thought proper to embrace ſuch opportunities, as his ſituation offered. From it, he hopes that ſome information will be derived, both to the adventerous, and alſo to thoſe who are curiouſly fond of inquiries of this nature.

The Physical Effects of Heat, and Cold, and their reciprocal changes on the Human Body.

PRACTICAL writers have commonly taken notice of the ſucceſſion of diſeaſes, with the courſe of the ſeaſons, but we are to obſerve, that theſe are very rarely the ſimple, or uncombined effects of the changes of the temperature alone; but together with theſe, we have to obſerve thoſe effects produced by various miaſmata, and effluvia, and alſo ſpecific infections, there is ſome difficulty in ſeparating theſe concomitant cauſes of diſeaſes, which occur from all thoſe various ſources, from thoſe of a more ſimple origin.—Therefore it is requiſite that we ſhould examine thoſe different cauſes of diſeaſes, in various ſituations, and points of view, in order to diſcriminate them with the more accuracy. For this purpoſe, attending to their cauſes, and progreſs, in various places, is indiſpenſably requiſite; and alſo, in various climates, and local ſituations on land, but more more eſpecially at ſea, where we certainly have the atmoſphere leſs combined, than it ever is on land, even in the moſt healthy countries.

In the conſideration of this ſubject, we mean to attend to the ſimple effects of a warm atmoſphere, and their conſequences, ſeparate from the impregnations which it often undergoes. Wonderful as it may appear to any perſon, on firſt turning their attention to this ſubject, there is very little information to be found on it, in any writings extant, hitherto; although winter, and ſummer have been alternately ſucceeding each other, in all ages, in the temperature climates, where the moſt diligent obſervers have reſided. But ſince the art of navigation has been brought to its preſent degree of perfection, within the laſt three centuries, we have opportunities of obſerving a ſpecies of artificial, or experimental changes, with their effects; and as in other departments of phyſic, the method of experiment, is often the beſt means of becoming acquainted with the common, and regular courſe of the properties, principles, and laws of nature; ſo likewiſe in this, we may hope by changes of climate, and local ſituation, to acquire ſome information, which a ſtationary reſidence in one place would not ſo readily afford; becauſe we are ſo very apt to overlook thoſe circumſtances, which we have been always uſed to obſerve, recurring regularly: as we may every day ſee miracles, without attending to them, only becauſe they are common.

Hippocrates paid much attention to the viciſſitudes of the ſeaſons, but the phyſical knowledge of nature, was ſo very little underſtood in his time, that although his diligence was great, and his ſagacious attention, to whatever fell under his own obſervation ſo accurate, as to appear wonderful; eſpecially when we conſider, that there was ſcarce any thing wrote on the ſubject before him, of greater magnitude than tablets, or accidental recipes; and a very little which was to be found, in the works of the few Grecian philoſophers, who preceded him. We are not thereſore to expect from him, what the times could not afford; although he travelled much in Greece, and Aſia, yet his obſervations on the winds, are moſtly of a local nature, and applicable only to thoſe ſituations in which he obſerved them; for as winds always partake of the properties of the countries, or diſtricts over which they have laſt paſt; and conſequently, if the country is high, mountainous, and cold, the winds will be cold and healthy; but if they paſs over a low, marſhy, warm country, the wind will be alſo warm, moiſt and unhealthy; if from ſea, it will be more temperate in the winter, but cooler in ſummer, or in fact it will carry the prevalent temperature of the place with it; but when Hippocrates ſeen an eaſt wind unhealthy, in one or two parts, he applied it to all eaſt winds, and many of his latter ſucceſſors have followed him in his errors, and overſights.

Had a rational attention been paid to the effects of heat, we ſhould not have had the medical faculty themſelves, differing in opinion concerning it, down to the cloſe of the eighteenth century, ſome contending for its ſtimulant, and others for its ſedative effects. This would appear wonderful, did we not conſider, that on all ſubjects there are men of various talents, whoſe diligence and information differ, in proportion to their acquiſitions: and every one ſuppoſes himſelf right, and others wrong. Beſides, many men of abilities often have an apathy to enquiry, believing aſſertions, rather than ſeeking for proof through large works, and following others, rather than thinking for themſelves.

The immediate effects of heat upon the human body, appear to be ſtimulant, and of all the agents in nature, we believe there are none more directly, and certainly ſo; but like all other ſtimuli, it deſtroys the vital principles by its exceſs; but in moderate quantities, it is neceſſary to life and health; and the total privation of it, is known to extinguiſh life, in the warm blooded animals; and to cauſe a torpor in the cold blooded: both theſe extremes, as well as the medium, we ſhall conſider ſeparately.

As it is obviouſly neceſſary, when we mention heat or cold, which are only comparative terms, that we ſhould fix ſome ſtandard to refer to. We mean to fix it at 65°, for reaſons which ſhall be given: for although the blood of all mankind is very near the ſame temperature whilſt in health, that is, from 96° to 98°, yet by being accuſtomed to various temperatures of the atmoſphere, they become habituated to that, to which they are moſt accuſtomed. Sudden changes, either to a warmer or colder temperature, affects them conſiderably: for inſtance, to a perſon coming from within the tropics 65° will produce a ſenſation of coldneſs, becauſe their medium heat was little under 80°; but to a perſon from a high, inland, northern country, eſpecially after the winter, this medium will appear rather warmer than they would wiſh; becauſe their temperature for ſome months, has ſcarce roſe ſo high as 40°: it is to be remarked however, that the young and ſtrong bear cold much better than the aged, weak, and thin; conſequently theſe latter would bear warm climates better than thoſe in the vigor of youth; and ſo alſo do youths before they arrive at maturity, and women in general, bear warm climates better than men; but their habits of life, as well as their more delicate temperaments, appear to be much in their favour, in this reſpect; for the ſtimulus of heat, added to conſtitutions full of vital energy, inherent ſtrength, and full veſſels cauſes inflammatory affections.

The ſtandard has been fixed at 62°; but this was by accommodating it to the northern parts of Europe, which are by no means in the middle of inhabitable latitudes; but in order to accommodate it to thoſe who bear the tropical heats 65° would be nearer the medium. For a mean of latitudes where the temperature would be moſt agreeable to the human ſenſations, as well as to animal life, it would appear to us, from a ſurvey of the globe, that from 40° to 55° in Europe, and from 30° to 45° in other parts of the world, would be the moſt agreeable reſidences for mankind; but as elevation may cauſe great differences in the reſpective temperatures of places; we mean ſuch ſituations, as are not conſiderably elevated above the ſurface of the ocean, and near ſea coaſts. The N. Weſt coaſt of America, we believe comes more near the European temperature, than any other part of the world, and there we might fix the moſt agreeable medium, from 35° to 50° all below theſe limits being over warm, and all above too cold, for agreeable habitations; but elevation, ſoil, vegetation, &c. cauſe great varieties in this reſpect, as we have already obſerved; ſo that the elevation is a matter of far greater conſequence, than the latitude, with reſpect to the temperature. But the connexion, and effects of theſe circumſtances, with the phyſical ſtate of man, his diſeaſes and remedies, we ſhall endeavor to trace out, in their moſt obvious relations and prominent parts.

The ſtimulant effects of heat, are very ſimilar to thoſe produced by other ſtimuli. On its firſt application, when moderate, it exhilirates, and enlivens the animal ſpirits, much the ſame as ſpirituous liquors, &c. as may be obſerved annually, on the acceſſion of warm weather, in all high latitudes, or ſtill more viſibly, in ſailing from cold northern countries, to the warm climates; and this effect continues in part, although it loſes ſome of its action by a long continuance; becauſe it ſtimulates, and ſets the latent vital energy in action; but when it is over ſuddenly applied, it exhauſts the vital energy too ſoon, and by theſe means, cauſes a depreſſion and weakneſs of the body. And accordingly we ſee that the inhabitants of the cold northern countries, are, on their firſt removal to warm climates, rendered more lively and alert; but by a ſeries of years continuance there, they generally loſe much of this diſpoſition, and eſpecially, if they are confined to ſedentary employments, in towns, &c. and the more viſible will this effect appear, the warmer the weather is, independent of topical influence from ſituation: ſo that we conſtantly find Europeans, after a long reſidence in warm countries, get thin, weakly, and emaciated; although, if their ſituations are otherwiſe healthy, they ſtill retain, or even increaſe in animation, although their minds ſeldom retain that vigor, which they had in their native countries, ſo that they cannot apply themſelves ſo advantageouſly to abſtruſe ſtudies.

The imagination being ſtronger than the reaſon or the memory, they become volatile, or ſink into hypochondriacs, in caſe they have made over free with ſtrong liquors; for a long reſidence in very warm countries, together with the additional ſtimuli of ſtrong liquors, weakens the body in an extraordinary manner, and alſo depreſſes the mental faculties, eſpecially where the mind has been in an uneaſy ſtate. Perſons in ſuch ſituations, are very ſubject to fevers from ſlight cauſes, or to hepatic (liver) affections; and we rather believe, that diſeaſes of the liver are the moſt frequent cauſes of hypochondriac, and other ſuch affections, after the energy is exhauſted by heat and ſpirituous liquors. As we are fully convinced of the ſtimulant effects of heat, ſo are we alſo of the ſedative effects of cold. Heat increaſes the action of the veſſels, and other moving vital parts, on the ſurface of the body.—Cold, on the contrary, allays and aſſuages this action; but we are to notice, that it is only on the ſurface that either of them can act directly, although many of the internal parts ſympathize with it; for the heat of the blood, and of the internal parts, are not perceptibly changed by the external temperature; ſo that all the effects of heat, are produced on the ſurface, and the ſympathies to which it gives origin; but even this, as we may obſerve, produces great changes on the ſyſtem.

In conſequence of the ſedative effects of cold on the ſurface of the body, the vital energy is accumulated, and by this mean the ſtrength is increaſed, unleſs in caſes of old age, or great weakneſs, in which they are apt to be overcome by the firſt impreſſion of cold. And in this ſituation, the cold acts as a permanent ſedative on them: and is over ſtrong for the vital energy to overcome: therefore old perſons do not bear the cold of winter, or the colder climates, ſo well as the young; and from only attending to their own ſenſations, they complain of the general temperature being changed. But the young bear the cold better than the aged; even infants have been known to ſurvive a cold, which has deſtroyed their mothers, when ſuckling them; an inſtance of which happened, not far from London, about 20 years paſt, in a froſty night.

The inhabitants of warm climates, on removing to colder countries, are commonly attacked with catarrhal affections, obſtructions of the viſcera and hypochondrias; for they are then deprived of that external ſtimulus to which they have been uſed, and eſpecially if they are paſt the prime of life, and have long reſided in warm climates, they are more ſtrongly affected in this manner, than any people can be, on the acceſſion of winter, after the hotteſt ſummer; for the ſummer's heat does not continue ſo long, nor is it ſo intenſe.

Heat, like other ſtimuli, when applied in moderate quantities is neceſſary to life and health; but an exceſs of it wears out, and deſtroys both, by keeping up too great an irritation on the ſurface, and other ſympathizing parts of the body; but an exceſs of cold acts not in the ſame manner, but directly oppoſite; and the natural temperature of the atmoſphere deſtroys life in both ways.— But ſun ſtrokes are more common than being frozen to death. On the application of cold to any part of the body, if it is not deprived of life, on coming into a warmer atmoſphere, a temporary inflammation ſucceeds, from the vital energy being accumulated during the action of cold, but by heat it is exhauſted, and the body weakened.—But if the rays of the ſun are avoided, the human conſtitution could bear much greater heats, than it is ever expoſed to in the natural heat of any country; as we have many experiments to prove, by heating rooms as Dr. G. Fordyce did, and in glaſs houſes, ſugar refineries, &c. But a continual heat ſets other cauſes in action, by haſtening putrefaction, and it alſo prediſpoſes the body to be more ſuſceptible of morbid impreſſions.

A heat of about 65°. where we have fixed the medium temperature, we are much diſpoſed to judge, would be the moſt agreeable for all mankind; both the phyſical and mental functions would, we believe, arrive at their greateſt perfection in ſuch a temperature; or ſuppoſe we allow a little more variation, as much above, as below this ſtandard, then we may ſay from 60°. to 70°. and then all above this may be called warm, and all below it cold; either of which produces diſagreeable ſenſations, which muſt leave their effects in the mind, and occupy ſome part of the attention. But the cold, although diſagreeable at firſt, yet if it does not fall much below the medium, the mind and body are both improved by it; and a heat, a little above this, is generally agreeable at firſt, although it debilitates the body, and alſo weakens the mind, if long continued; but their alternate changes are rather agreeable than otherwiſe; for there is an innate fondneſs for variety, implanted in the human mind. As when they do not go to exceſs, they cauſe a pleaſing variety; and we have much reaſon to conclude, that the changes contribute to the preſervation of health; for as Sydenham obſerved, the changes preſerve a balance. On this account, an over great uniformity in any of the articles of regimen, are to be avoided by thoſe, who would wiſh to preſerve their healths in the greateſt perfection, for neither food nor drink, air nor exerciſe ſhould be very uniform; otherwiſe they cauſe a great ſuſceptibility of the body, or prediſpoſe it to be acted on by every variation of the air, or regimen, and weakens the mind, as well as the body, and deprives mankind of their true happineſs.

SKETCHES

OF

MEDICAL TOPOGRAPHY.

> *Mortalibus vitæ, et morborum ægrotis, ærem esse auctorem.*
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> *Hip. Lib. de Flat.*

IN the following ſketches, we intend to collect the reſult of various obſervations, made in many parts of the world, but principally in warm climates. We do not conſider this ſubject the leſs intereſting at preſent, although the exiſtence of marſh miaſmata; and what is ſtill more marvellous even of infectious effluvia; has of late been denied. This has been done with the more confidence, becauſe modern chymical experiments, have not at all times been adequate to demonſtrate the preſence of theſe effluviæ. With the ſame propriety might the ſenſible properties of any other ſubſtance be denied; ſuch as taſte, ſmell, &c. becauſe they cannot be demonſtrated by any chymical analyſis. But theſe properties are the immediate objects of ſenſation; miaſmata and effluvia we can ſeldom diſcover, only by their effects.

We muſt confeſs that there has been much done in the preſent age, in the inveſtigation of the operations, the principles and properties of theſe ſubjects; but much is yet to be accompliſhed by experiments, before we arrive at the ſummit of human perfection; for the field appears to widen as we advance in it—But the application of experiments to their proper purpoſes, and to no other, as has too frequently happened, is an object of ſome utility; for moſt new diſcoveries are miſapplied, and this is often the cauſe of their falling into neglect; the reſult of obſervations, though ſlow, is commonly applied to advantage ſooner.

The atmoſphere at ſea, being unaffected by the exhalations from either vegetable, or animal decompoſition, or the miaſmata (exhalations) of ſtagnant water, muſt obviouſly appear to be the beſt ſituation to draw our inferences from, unleſs we were to take that of high, or mountainous countries, which is commonly ſufficiently pure alſo.—Small iſlands in the ocean alſo enjoy a very pure air, eſpecially where they are high and dry; and ſo does ſome large iſlands, and even continents, where they are free from ſtagnant water.

It is a remarkable difference which takes place, between an atmoſphere with moiſture ſimply diffuſed in it, as it often is at ſea, or in high and healthy countries, and that which exhales from ſtagnant water, ſwamps or marſhes; the former is ſeldom hurtful, whereas the latter is often pernicious. To thoſe we ſhall particularly attend in the enſuing ſketches.

The heat of the atmoſphere, being confined very near the common level of the ſurface of the ocean, in all climates, appears to be a cauſe of the heats being ſo great in low countries, eſpecially in warm climates, and conſequently of the noxious exhalations, of which heat is always the active agent; the heat of any part appears to be affected by various circumſtances; but it is commonly in proportion to the number of the rays of the ſun, which fall in a given ſpace, as we may prove by a lens, or mirror; therefore where they approach neareſt to a perpendicular, they are the ſtrongeſt: and when the air is clear; they act on the earth with the greater force. But although the light comes from the ſun, the heat does not, the rays of light only extricate it from the earth; otherwiſe the higheſt mountains would be the warmeſt parts of the world, as they are neareſt the ſun.

All ſubſtances which can be diſſolved, and ſuſpended in the air, by the heat of our atmoſphere, muſt be in part mixed with it; many ſubſtances are alſo volatilized, and diffuſed in the air by putrefaction; but proceſſes of this nature, require a certain degree of heat, it muſt be above the freezing point, at leaſt; for below it all (ſeptic) proceſſes are ſtopped.

Great heats, when accompanied by moiſture, volatilize many ſubſtances, which more temperate weather will not affect; but vegetable putrefaction, or the expoſure of a moiſt ſurface in the time of froſt, does not change the properties of the air, for froſty weather is equally healthy in all parts of the world. The air being of all other known ſubſtances, the moſt neceſſary to life, and its variations ſo generally affecting our healths: It is therefore deſerving of the moſt ſerious attention of the phyſician, as well as that of the general philoſopher.

The atmoſphere in general contains about three fourths of its quantity of air, in which neither animals can live, nor fire burn; this has been named mephitic (or azotic) air. The other other fourth is the pure vital air (oxygen) but even the abſence of the pure principle does not render it ſo hurtful to life, as the preſence of fixed, or inflammable airs, which are commonly extricated by the decompoſition of either water, or vegetable ſubſtances. It is the pure part of the air, which imparts the beautiful ſcarlet colour to the blood. It is alſo the ſupport of the vital principle, (or its pabulum) but the fixed and inflammable airs impart a darkiſh, brown colour to all the red parts of the body, but particularly to the blood. Any part of the body being inflamed, it darkens the blood more than is common in circulating through it, although it acquires a dark crimſon colour, always in its courſe through every part of the body, except in the lungs. The neceſſity of freſh air, about a gallon a minute, or near the ſame quantity, which a common candle requires, is abſolutely neceſſary to ſupport life, and health. By Dr. Crawford's experiments, it appears, that when the body is immerſed in warm water, or warm air, the venal blood returns but little darker coloured, than the arterial blood is; this may ſerve as a proof, that heat alone is not a cauſe of a dark colour, when the rays of the ſun are excluded from the body; but it appears to act through the intermedium of other ſubſtances. But we find ſome perſons having very good colours, for two or three generations, in healthy iſlands, between the tropics, as in St. Helena, the Iſle of France, &c.

The inflammable air contained in the venal blood, being the ſubſtance which principally attracts the vital air. When this is deficient, leſs of the vital air mixes with the blood, in the lungs, and conſequently leſs heat is extricated; this appears to be the only explanation we can give, why the interior parts of the body and blood, are no hotter in warm, than in cold climates, or ſeaſons.

But as a ſupply to the waſte of pure air, which is conſumed by the breathing of animals, and the burning of fuel; the growth of vegetables affords it in great quantities, when the ſun ſhines on them, they alſo abſorb inflammable air, as part of their nutriment; this appears to have been the deſign of the Creator, in their formation, and omnipotent wiſdom is here conſpicuous. The evaporation of water alſo affords pure air, ſo that the only large tracks of the earths ſurface, which are without either of theſe means of ſupply, are the ſandy deſerts of Arabia, and Africa, for their ſuffocating winds, appear to be deprived of their due proportion of theſe principles, as travellers often experience.

The effects of heat upon pure water, either freſh, or ſalt, only ſerve to evaporate it, and by this means to combine it with the air, for warm air always contains much water in an erial ſtate; unleſs we except the Harmatan, or Sirocco winds, juſt mentioned; for ſo far as we can collect information of their phyſical qualities, they are remarkably dry. But the proportion of the pure principle contained in water, is found, by chymical analyſis, to be much greater than it is in the atmoſphere, for water contains it in the proportion of about four to one, or about 84 per cent. of (oxygene) or the principle of pure air, and the remainder is inflammable air; but the atmoſphere contains only about one fourth of its quantity of pure air;

and the other three fourths, are called azotic (mephitic) air, which cannot ſupport either animal life, nor the flame of fuel; from this conſideration, the evaporation of water would appear to be a neceſſary part of the compoſition of common air, becauſe when deprived of it, as in the Arabian winds, it becomes deſtructive.

Neverthelefs, we find by experience, that when either warm, or cold air is overloaded with water, it is hurtful to human life and health; here living experience goes counter to what we might be led to ſuppoſe, (a priori) from chymical analyſis; but this is not the only inſtance in which chymiſtry comes far ſhort of demonſtrating the effects which phyſical ſubſtances produce on animal life; for there are no ſtates of the air, in which it is more diſagreeable to our feelings, than when it is much impregnated with moiſture, either in a warm, or cold ſtate of the atmoſphere, for we are weakened, and diſpirited in the moſt evident manner, when the air is warm; and the ſurface of the body becomes relaxed, and our minds and bodies are both rendered languid, by its continuance; from theſe facts then, we would be led to believe, that moiſt air does not perform its office in the lungs, ſo well as drying air does; whether this happens by its not imparting the pure principle, together with the heat, or by its not attracting the fixed, or inflammable air from the blood, we are not yet warranted in determining from actual experiments. Cold and moiſt air, appears to obſtruct perſpiration, by rendering the ſurface of the body more quieſcent, or leſſening the action of the fine hair like (capillery) veſſels of the ſkin; hence proceeds (catarrhal affections) or colds, and in a warm moiſt air, we are involved in a ſpecies of natural vapour both; and inhale the ſame in reſpiration, by which means, we become ſo relaxed, as to be affected by the leaſt change in the atmoſphere.—And hence proceeds dyſſentaries, and choleras, together with intermittent, and remittent fevers, accompanied with bilious appearances. But a dry pure air, imparts a chearfulneſs, ſtrength, and alacrity, as in froſty weather, by it we are rendered more happy for the preſent, and more able to reſiſt future impreſſions; but pleuritic pains, and conſumptions are ſometimes produced by it. But water impregnated with vegetable ſubſtances in a ſtate of fermentation, gives out to the air, during the decompoſition both fixed and inflammable air; the fixed air when it exceeds the bulk of the water, is imparted to the atmoſphere, but in leſſer quantities, it is abſorbed by the water, the inflammable and azotic airs, it does not abſorb—The water of the Thames, when carried out in ſhips, undergoes a fermentation as ſoon as it arrives in warm climates, on account of its muddineſs, &c. and the vegetable extracts mixed with it; after which by the time it gets to the ſouthern hemiſphere, there is ſo much inflammable air extricated, as to burn with a blue flame on the application of a candle.

In conſulting practical authors, a due regard ſhould be paid to the difference of climate, between where the practitioner wrote, and that of the reader, on this account a knowledge of geography, and topography, are eſſentially neceſſary to an intelligent phyſician; the prevalent winds alſo, their heat, or coldneſs, moiſture, or dryneſs, may be partly learned from the topographical deſcriptions of the countries, with reſpect to hills or plains, woods, or marſhes, lakes and ſeas, and the nature of the ſoil, which the winds laſt paſs over, forms an important part of medical ſcience. Hippocrates appears to have paid due attention to theſe ſubjects in his obſervations upon air, places, and waters, which is nothing more than medical topography; but it appears ſince his time to have been much neglected. But as for the water which is uſed for cookery or for drinking, it makes but very little difference with reſpect to the ſalubrity of the place where it is uſed. Whether it is hard or not, as the expreſſion is, for its qualities of not eaſily lathering with ſoap, or boiling peas, or the contrary; and if there are any material difference, hard water may be ſoftened by expoſure for ſome time to the air, by this means its acid will evaporate, and the ſelenite, or other mineral particles which it held in ſolution, will be depoſited, or this may be more ſpeedily effected, by mixing with it, a ſmall quantity of lime water, or quick lime. Thoſe who have been uſed to ſoft river water, when they firſt come to uſe hard well water, are very apt to be diſordered in their bowels by it. In my firſt voyage to India, being in a ſtore ſhip for the Iſland of St. Helena, where the water is very hard, I ſuffered by it perſonally; and a number of the ſailors, and recruits belonging to the Eaſt-India company, after getting the St. Helena water, were attacked with violent griping pains in their bowels, ſo violently that they would frequently cry out, and roll themſelves about upon the decks; this affection was ſo common, that we remember being three times raiſed out of bed in the courſe of one night; on this account the moſt effectual and ſpeedy relief was obtained, by giving immediately, a ſmart emetic; and as ſoon as the vomiting began, the pain gradually ceaſed, and if it returned at intervals after the operation of the emetic, a few drops of laudanum commonly cured it; notwithſtanding this, the water of St. Helena is both pleaſant and wholeſome, to thoſe who are uſed to it, after the firſt two or three days; it is ſtagnant water that endemic ſickneſs is generally cauſed by: whenever they are cauſed by water, and not by that which is uſed internally; for even ſuppoſe it is drank, or uſed in food, with foſſil particles diſſolved in it, they can ſcarcely be capable of doing any harm, unleſs they are ſenſibly perceived by the palate, as chalybeat, or ſulphureous, or other ſprings are; and of courſe they will be rejected, unleſs uſed medicinally; very cold water would appear to be beſt for weak ſtomachs, and languid habits of body; and ſoft water for thoſe of an inflammatory diſpoſition; but before any of them gets into the blood veſſels, their nature is changed in the courſe of digeſtion, ſo that they are all much the ſame before they are even abſorbed by the lacteals; much leſs can they carry their earthy particles into the bladder, and cauſe the ſtone, or gravel there, as has been very erroneouſly thought by old writers, and others, even to the preſent day. There are great allowances to be made for writers of very different climates, as well of different local ſituations; on this account, the writings and obſervations of the antient Grecians, and Romans, are not always applicable in Britain or Ireland; nor are the obſervations, or practice of Britain, at all times ſuitable to the inhabitants of North America, or the countries between the tropics; but from the ſimilarity in climate, between Greece, and Italy, and that of the United States; we may expect a greater ſimilarity in the progreſs of diſeaſes, in theſe countries; they lying under the ſame parallels of latitudes: than between either of them and Great Britain, where the heat never is ſo great, as in either of them; nor the cold ſo great as in North America, nor the changes near ſo ſudden, owing to its inſular ſituation, and enjoying the temperate weſtern breezes, from the Atlantic; on this account the Grecian, and Roman medical writings, may be read with more advantage in the United States of America, or even in the Eaſt or Weſt Indies, than in Britain, and Ireland; for their diſeaſes are more ſimilar. And on the ſame account, we ſhould pay more attention to the modern Italian practitioners in the United States, than in Britain, or Ireland; and find their deſcriptions of diſeaſes coincide more nearly with our own. The ſouth of France is as hot in ſummer about Montpelier, and Marſeilles, as America is about New York, Philadelphia, and Baltimore, and the middle ſtates in general. But although a few of the French excel in chymiſtry, anatomy, and operative ſurgery; yet for a nation ſo far advanced in the ſciences, we hear of very few practical works produced amongſt them of late: neither do the Spaniards appear to be before them in that reſpect. Whether this is owing to the low reputation in which the practice is held in theſe countries; we are not certain; but this is a very probable cauſe, as men of abilities and information, will not readily chooſe a buſineſs, which is neither honourable nor profitable: and much of the practice of ſurgery being in the hands of barbers, all over the continent of Europe: Germany does not appear to be before them in theſe reſpects; and no doubt for the ſame reaſons; for although in all theſe, a few profeſſors, and phyſicians to princes, are liberally provided for, yet that appears to be very far from the caſe with the greateſt number of the practitioners.

We have been neceſſarily led into this digreſſion, from the conſideration that the temperature of the continent of Europe and America, are more ſimilar, than that of the Iſlands of Britain and Ireland, is to it, as the exceſſes of heats and colds, are much greater on the continent than in the Iſlands, although the habits, food, and clothing, of the United States, are more ſimilar to thoſe of the Iſlands of Europe, than to the continent; the language being the ſame, there are, therefore, a predilection in favour of Britiſh books, but there are ſufficient reaſon, why the obſervations of the Ancients, are more applicable, to the preſent inhabitants of the United States than to thoſe of Great Britain; in the firſt place the ſimilarity of the climate; Hippocrates remarks, that in his time the inhabitants of Aſia were effeminate, cowardly, and ſlaves to deſpotiſm; whereas the inhabitants of Europe at that time, were brave, hardy, and independent republicans; but a conſiderable change appears to have taken place ſince his times in Europe.

Medical Topography may be conſidered we believe, as the moſt conſpicuous manner of inveſtigating the effects and cauſes of the noxious Atmoſphere, peculiar to ſome local ſituations, and ſeaſons of the year; from heat and infection.

Theſe are ſubjects of inveſtigation which although they have been commonly blended together, may very well be treated of ſeparately, and in order to convey proper ideas of them, and of their ſeparate effects, they ſhould each be conſidered by themſelves. It has been common for many years paſt, with practical writers, to begin their works with deſcriptions of the diſtricts in which they have practiſed, ſuch as the nature of the ſoil, minerals, vegetables, water and air; ſimilar methods have been followed by thoſe who have attended armies and navies, with various degrees of attention, and abilities, ſo that at preſent there is ſcarce a work undertaken without ſome ſuch preliminaries; and as local ſituations and climates produce ſuch varieties in the phyſical ſtate of the human body, and its diſeaſes, this mode of tracing their cauſes and effects is both uſeful and perſpicuous. In this manner it has been treated by Pringle, Cleghorn, Lind, Clerke and Blane, but particularly by Lanciſi, who practiſed in Rome about an hundred years paſt, and ſeveral others, within the laſt fifty years; from theſe, as well as from ſome of the ancients, and more early moderns, we may collect much uſeful information in this mode of inveſtigation; but although they have done much, we are not to ſuppoſe they have exhauſted the ſubject: they have laid the foundation, but it will require the united labours of many others, before the future fabric is brought to that degree of perfection of which it is capable.

Of all thoſe who have wrote on ſubjects of this nature, they have rarely ſeparated the effects of miaſmata, and of infectious effluvia, from thoſe of heat and cold, ſo as to exhibit their effects ſeparately, each by themſelves, with their cauſes and means of prevention.

By purſuing theſe inveſtigations, we trace the external ſource of diſeaſes; but for the internal cauſes, we muſt have recourſe to the ſtate of the human body itſelf. Local ſituations, as towns, or the open country, whether elevated or low, marſhy or dry, hilly or plain, covered with vegetables, or ſandy and bare, all have their influences.

Medical Topography is a ſubject ſo obvious to all mankind, that there are no other methods of tracing the cauſes of diſeaſes ſo univerſally underſtood; for almoſt every ſeaman can enumerate the diſeaſes, and the times of the year in which they are moſt prevalent, in thoſe places to which they reſort; and it is alſo known to landſmen, that there are ſome particular local, flat, marſhy ſituations, remarkably unhealthy; and alſo, that there are other mountainous, dry ſituations, which are remarkably healthy; and great varieties of intermediate ſituations, which partake of each occaſionally.

As this mode of ſearching for the cauſes of diſeaſes was begun by the father of medicine, we might expect that in the long interval from his time to this, 2200 years, it might have attained to a conſiderable degree of perfection in the preſent time, did we not recollect, that ſuch modes of inveſtigation do not well accord with the lives of ſcholaſtics, into whoſe hands much of the practice, teaching and writing had fallen, until the latter ages, when true ſcience has again been cultivated experimentally and rationally.

The air of cities and large towns, is generally known to be both unhealthy and diſagreeable, eſpecially when they are ſituated in warm climates, or in the warm ſeaſons of the more temperate latitudes: therefore they are expoſed to ſome diſeaſes from which the country is exempt; but they are more free of others than the country—Heat and moiſture are the great ſources of diſeaſes in the country. As fermentation will not take place unleſs the fluid expoſed is in a ſtate of reſt, and in a ſufficient degree of heat, as from 60° to 100°; ſo likewiſe, the proceſs will not take place in marſhy ground, unleſs the moiſture is in a ſtate of ſtagnation. But pure water in a ſtagnant ſtate will not undergo any change in conſequence of heat and ſtagnation, unleſs it is impregnated with vegetable ſubſtances. Hence the water of clear ponds or lakes, with ſandy or gravelly ſhores, do not undergo any fermentatory proceſs, even in warm weather, and conſequently do not vitiate the air; neither does the ſtagnant water of high northern latitudes, although ſtrongly impregnated with vegetable matters; as for inſtance, the turf bogs in the northern parts of Britain and Ireland, although they are commonly full of ſtagnant water, deeply tinctured with vegetable matters, yet there are rarely any inſtances of their neighbourhoods being more ſickly, than the greateſt diſtance from them; neither does the maceration of flax produce any ſickneſs there, which Lanciſi was under ſo much dread of in Italy: and as he was an accurate obſerver of facts, he muſt have had ſome reaſon for the dread he entertained of flax ponds; as the temperature of the countries are conſiderably different, eſpecially in the ſummer and autumn.

It is to be hoped that the term of fermentation, is properly enough applied to the beginning of that ſceptic proceſs, which takes place in putreſcent marſhes, as this is a familiar term in domeſtic economy; it conveys a more clear idea of the change which takes place, than decompoſition, by which the putrefactive proceſs is underſtood beſt by chymiſts: we do not mean however to overſtrain this term, by applying it as formerly, to any of the animal proceſſes, either of health or ſickneſs; we only apply it to dead vegetables.

It is a fact eſtabliſhed by innumerable obſervations, that the air of the open ſea is always favourable to health, and alſo in large bays and lakes, whether they are freſh or ſalt water; although near unhealthy ſhores, they extend their influence to ſome diſtance, which Dr. Lind has limited to three leagues; but this can only be conditional. In many caſes the noxious miaſmata do not extend near ſo far as this; particularly where the exhaling ſurface is of ſmall extent; but when it is large, the exhalations may reach much farther; in a ſtate ſufficiently ſtrong to produce their pernicious effects; the exhalations of a ſurface of one mile, may be ſufficiently blended with the atmoſphere, ſo as to be quite innocent, at three miles diſtance, eſpecially where woods or hills intervene; whereas an extent of twenty miles of marſhy ſurface, will extend its influence, near as many miles out to ſea, &c. and an extent of a quarter of a mile, may ſcarce extend its influence one mile in ſome directions; but the courſe of the moſt prevalent winds, influence theſe matters very much; for when the winds paſs over thoſe ſurfaces, from whence miaſmata are extricated, we have always found that their influence is carried far in that direction, and a very ſhort diſtance againſt the prevalent winds; but as in warm countries, there are both ſea and land breezes, theſe pernicious effects are commonly carried in the direction of theſe winds; therefore they ſeldom extend their influence in a lateral direction. In the iſland of Sumatra, Old Bencoolen, in which there is a ſtagnant creek, has always been remarkably ſickly to Europeans; it is only about one mile from Fort-Malborough; the ſpace between them is interſperſed with wood, and this laſt place has been always found much healthier than the former; and here all the company's ſervants have reſided for many years paſt; but even this, and all theſe coaſts are very unhealthy to ſtrangers, eſpecially in the rainy ſeaſons. The baſon in which ſhips commonly lie here, is tolerably healthy; it is three leagues from the ſhore, and is encircled with a congeries of coral reefs, which coral grows in the bottom of the water, like a ſhrubbery, of which a little iſland of about an acre in extent is alſo formed, about a quarter of a mile from the baſon, on which grows ſome cocoa-nut trees. But Pulo bay, about ten miles to the ſouthward of this, is one of the moſt beautiful, as well as the moſt unhealthy bays in the world: it is beſide Sillebar, where a conſiderable river empties into it; the bay is about a mile in diameter, and circular, bordered with a beautiful ſandy beach; it is almoſt ſurrounded with low ground; the point of land to the weſtward, which ſeparates it from the ſea, and alſo that to the ſouthward is all marſhy. The river cauſes the water of the bay to be brackiſh; the bilge water here has a ſtrong hepatic ſmell, (like liver of ſulphur); all the inſide of our veſſel was ſtained by it with a leaden colour. We loſt three men by ſtaying eight days here; and a corporal's guard, which was on ſhore at the company's pepper ſtores, were ſtill more unfortunate, for they loſt two or three of their number in the ſame time; even the native black ſailors from the continent of India, who were here in a country ſhip, were very ſickly, as we were requeſted to viſit them by Capt. Wilſon, we believe the ſame who has ſince diſcovered and given us an account of the Pelew iſlands. The baneful effects of this place, are the more deeply impreſſed on my memory, becauſe it was the firſt very unhealthy part in which we were in India, or elſewhere. Both fevers and fluxes were peculiarly malignant here; and all along this coaſt, they both raged with equal violence, at the ſame time, and alternately in the ſame perſons; which circumſtance is a proof of the near relation which theſe diſeaſes bear to each other; of this we have ſeen many inſtances ſince that time, in other ſouthern countries, for there rarely ever happens a dyſſentery, without a fever, although fevers are not always accompanied with dyſſenteries; but when they are, perhaps it might be accounted more properly a ſymptom of the fever than an original diſeaſe; and we conſider it as a favourable omen in fevers; for we have always ſound diarrheas and dyſſenteries more tractable than fevers commonly are; but on this coaſt, we met with the moſt malignant caſes of dyſſenteries, which we have ever ſeen in any part of the world; and alſo ſuffered perſonally from this diſeaſe, as an habituation to warm climates. The dyſſenteries which we have ſince often met with, in China, and other warm climates, were mild when compared with theſe.

Frequent rains appear to anſwer the ſame purpoſes in marſhy grounds, as a conſtant ſupply of running water; either of them renew the water too frequently for fermentation to take place, whilſt they continue every day, or every two or three days; for by this means, there are continual changes of the water, which partially anſwers the purpoſe of a ſtream running through it: on this account, ſo long as rains continue frequent, in ſummer or autumn, there are rarely any deſtructive diſeaſes, although mild intermittents may appear: but when the rains ceaſe to be frequent, then it is that the pernicious conſequences follow; for the rain water of the former periods, being collected in ponds on the ſurface of the earth, and mixed with vegetable and other ſubſtances, undergoes a fermentatory proceſs, by which the air is impregnated with the effluvia; which cauſe theſe deleterious effects which we ſo frequently experience in autumn; for that a great part of the ſubſtance of putreſcent vegetable matters, are diſſipated in the air, is proven by the almoſt total diſappearance of ſuch ſubſtances, and alſo of animal matters by putrefaction, and alſo by the effluvia which is extricated from them, and ſo ſenſibly perceived by the ſmell; and even by the proceſs of vegetable fermentation, large quantities of fixed air is extricated.

The diſeaſes moſt frequent at Canton, the only ſeaport in China, into which foreign trades are admitted, are remittent and intermittent fevers, and fluxes; but theſe diſeaſes are not of a nature ſo dangerous here, as on the weſt coaſt of Sumatra; although the river in which the ſhips lie at Wampoa, is not half a mile over, and on the ſouth ſide of it are Danes, and French iſlands, which are partly hilly and dry, and partly rice fields; and on the north ſide of the river, it is all rice fields for ſeveral miles, but there are large hills or mountains in ſight over them;

and although this is within the tropics, and the heat much greater in the ſummer than it ever is at Bencoolen, being commonly from 90° to 100° in the ſhade in Canton, the winters are as cold as any perſon would wiſh after theſe heats, although ſeldom below the freezing point; but in Sumatra from 70° to 90° is the general range of the thermometer, from many years obſervation, at Fort-Marlborough, lat. 3° 36′ ſouth: but there are very large mountains 20 or 30 miles diſtance from the ſhore here; a chain of them extends all along the iſland, nearly parallel to the coaſt, and the country is almoſt covered with wood, only ſome ſmall ſpaces, near habitations, where they have cleared for gardens, and the pepper plantations; but to an obſerver ſailing along the coaſt, it has the appearance of a continued foreſt: this does no doubt contribute to moderate the heat of the air in the dry months; but from November to February it is exceſſive ſickly. The iſland of Java has much the ſame appearance as this, only that in ſome parts of it, there is more cultivation: the other Sunda iſlands and Malacca, are not conſiderably different from theſe.

The ſpace propoſed to be allotted to this part of the work in hand, will not allow of any thing like a general topographical deſcription, even of thoſe parts of the world which we have viſited; this beſides, would be an undertaking which would often lead us too far from the object of our purſuits: we can only give ſketches, which may be applicable to other places in general, interſperſed with occaſional remarks on thoſe places, which have come under our obſervation; ſo as by this means to keep the principal objects of purſuit in view. Inſtead, therefore, of a full account of one country, we muſt purſue our ſubject often through ſeveral: for of what utility would it be, to ſhew that the eaſt ſide of one river, marſh or mountain was unhealthy, and that the weſt, the north, or the ſouth, of others were ſo? unleſs we at the ſame time endeavour to inveſtigate the cauſes of theſe phenomena; if we can do this with any degree of ſucceſs, the principles on which we proceed will be univerſally applicable to others in ſimilar ſituations.

Sir John Pringle found the health of the army in the Netherlands, to be in proportion to the depth of the water under the ſurface of the earth, which he meaſured by the depth at which it ſtood in the wells: but there are many very unhealthy ſituations, in which there is no ſtagnant water to be found; we ſhall mention as one inſtance of this, Peterſburg in Virginia. This has always been noted for an unhealthy ſituation; yet here we could not diſcover any ſufficient cauſe for this, either in the town or its neighbourhood, if we except only a ſmall piece of banked meadow, of leſs than two acres, about half a mile from the town, on the river towards Blandford: Along the river ſide, between it and the town, there is a plain of two or three hundred yards over, which was ſaid to be formerly marſhy; but which, when we viſited it in the year 1798, was covered two or three feet deep with ſand, by an inundation of the river, ſome years before—a very happy circumſtance for this town, as it appeared afterwards: for this accident was ſaid to have rendered the place much healthier than formerly. The oppoſite ſide of the river to the northward, is all high land, and the ſouth ſide, on which the town ſtands, riſes in different ſtages, and there is a gradual aſcent for about three miles to the ſouth weſt; ſo that the town, although partly elevated from the river, is rather in a valley, with reſpect to the country, the river, or rather the creek of Apomatax, is ſcarce an hundred yards over; in ſome places not as many feet, .and at the upper part of the town, it is contracted between two racks ſcarce ten yards apart; the whole country, in every direction, is elevated, and dry, unleſs ſome very ſmall ſpaces down the river, along its banks, towards its junction with James's river. But the whole country is high, hilly, and broken, much more ſo than we could form any idea of, from any deſcription extant.

Richmond alſo ſtands on high, broken ground; on the north ſide of the falls of James's river it is accounted healthy for the country in which it is; the lower part of this country, about Norfolk, is an uniform plain interſected with rivers and Creeks of tide water, it is generally covered with pine woods, with ſome plantations interſperſed, the whole country is univerſally unhealthy; unleſs on the ſhores of the ſea, the Bay and large rivers, it is conſiderably better than farther inland, but even the rivers are ſar from being healthy, the open ſhores of the ſea, and bay are more ſo. Hereabout all animal nature, appears to decline, had the Abbe Raynal taken his information relative to America; from this part of the country, he would not have been in much of an error, here the rabbits are not larger than rats, and black cattle do not attain one half the ſize which is common in other places; and the inhabitants ſhew the viſible effects of a pernicious atmoſphere, eſpecially after twenty-five years of age; a thin, ſallow appearance, is more common hereabout, than we have ever obſerved it, in any other part of the world, even in the hoteſt climates; and they are commonly tormented with agues, one half the year; and ſcarce ever get clear of the appearance of them; in this reſpect the town is more exempt from ſickneſs than the country, but here they have the infection, of the peſtilential, or yellow fever, every two or three years which although it ſpares the natives; and moſt of thoſe who have reſided there, two or three years, it is very mortal to all ſtrangers from northern, or healthier ſituations, even thoſe from Peterſburgh, or Richmond, Williamſburgh, or York, commonly ſuffer here in the autumn, the ſoil hereabout is uniformly a ſterile, loamy clay, with a ſmall mixture of fine ſand, and no gravel, or ſtones of an ounce weight, within many miles; by this means whatever rain-water falls on the gound, lies until it is evaporated, for there are no declivities, unleſs on the banks of creeks, to convey it off; and the earth, is of a nature too compact to abſorb it; by this means, it ſoon becomes impregnated with vegetable matters, and by the intenſe heat of the ſun, exhalations of a moſt pernicious nature are extricated; by which the whole atmoſphere is adulterated, particularly when the wind is from the ſouth, to the ſouth weſt, for in this direction, it paſſes over a large extent of ſuch low ground, as this deſcribed, but particularly the great diſmal ſwamp which is in ſome parts only five or ſix miles diſtant: and the air which comes in that direction, in warm, ſultry weather, ſuch as it very generally brings with it, is by far the moſt diſagreeably ſuffocating, and pernicious, that we have ever experienced, in any part of the world, even in Sumatra or Java. It appears to many an inexplicable myſtery, why the ſtationary inhabitants of this town, are ſo generally exempt from the infection of the peſtilential fever of the fall ſeaſon; when at the ſame time, it rages ſo violently among ſtrangers, but any one who makes a compariſon of theſe people, and their local ſituation, with thoſe of other place, further north, we are perſuaded will find no difficulty in the matter. It is certainly to be explained on the ſame principles, by which it has been found, that the healthy, and robuſt, inhabitants of northern counties, are more ſubject to this diſeaſe, and generally worſe under it, than the inhabitants of warm, and unhealthy countries are: in Charleſton it has always been remarked, that thoſe who have lately arrived there, from the northern ſtates, ſuffer moſt by this diſeaſe, when it has raged there; and in the Weſt Indies, it is the armies, and fleets, and other lately arrived ſtrangers, who ſuffer moſt by it; and in this, there is certainly nothing abſtruſe; but the great ſource of error aroſe from confounding the peſtilential fever, with the common remittents, between which, there are very great and obvious differences, both in their nature and appropriate treatment.

The effects produced through the medium of the air, are very little regulated by latitude alone, other local circumſtances produce much greater effects; ſuch as the elevation, and form of the ſurface, and the nature of the ſoil; the fenny parts of England, in Cambridgeſhire, Lincolnſhire, and Kent, and the low, marſhy maritime parts of the Netherlands (or Belgium) are viſited with fevers every autumn, although the hilly ground is very healthy, only a few miles diſtant. Where hills and woods intervene, they are very great preſervatives, although an eminence, expoſed to the marſhy exhalations, is not ſafe, as we have repeatedly experienced. In the autumn, the winds are frequently from the ſouthward; in all the low, unhealthy, maritime tract of country, which extends from the Neverſink hills in Jerſey, near Sandy-Hook, to Cape Florida: this track extends acroſs Jerſey towards Burlington, and down the Delaware to Chriſteen Creek, which ſeparates the high and healthy, from the low and unhealthy parts of Delaware, and it croſſes this neck, which ſeparates the two bays; ſo that all the peninſula between them, is in general unhealthy; this low track croſſes the Cheſapeak ſouthward of Anapolis in Maryland, and continues to the ſouth-weſtward through Virginia, in the ſouthern parts of which it extends near 100 miles inland, and continues nearly parallel to the mountains, and to the ſea coaſt, through the Carolinas, Georgia and Florida; but beſides this great track, which is ſubject to be viſited by fevers, and fluxes every autumn, there are many other ſmaller diſtricts, in other parts of the United States, of a ſimilar nature, principally where there is flat or marſhy ground, and about ſmall lakes, or ſlow running rivers.

In the weſtern parts of the ſtate of New-York, principally about the ſmall lakes, there are large ſpaces of flat ground, and much ſtagnant water, and here agues and remittents prevail, commonly ſucceeded by obſtructions in the viſcera of the belly (abdomen) as the liver and ſpleen, and the inhabitants are commonly of a ſallow colour. The Britiſh ſettlement on the weſt ſide of Niagara, is remarkably unhealthy; agues are ſaid to be more prevalent there, than in any other part of North-America; and in common, where this is the caſe, muſquitoes and other inſects are numerous, and they abound through all theſe parts. We would not have ſuſpected, *(a priori)* to find ſuch a country as this, ſo far to the northward, particularly about Niagara, where there is much high land, and a waterfall ſo ſtupendous! But near the ſettlement there is much marſhy ground, and ſlow running ſtreams, on the weſt ſide of the great rapids. Mr. A. Ellicot, who is perhaps better acquainted with the geography of this country, on the New-York ſide, than any other, informs us, that the neighbourhood of the ſmall lakes is generally unhealthy, becauſe of the ſtagnant water, which hereabout has not a free diſcharge—a very common occurrence about ſuch lakes; but that the ſhores of the great lakes, are ſalubrious; in this reſpect they reſemble the ſhores of the ſea; for their extents are ſuch, that we cannot expect any noxious miaſmata could be carried over them. In the North Weſtern Territory alſo, between the Ohio river, and the great lakes, it is an almoſt continued marſh, particularly beyond the great Miami river, and towards the heads of the rivers which empty into the lakes, the Ohio, and Miſſiſippi; only between Lake Huron, and Lake Mitchigan, there is an elevated plain, of dry and healthy ground.

But now as we have pointed out ſome of the worſt, we may alſo delineate ſome of the moſt healthy ſituations, in the United States. In the middle and ſouthern ſtates, the country is in general healthy from the falls of the rivers to the mountains, and thence to the Ohio and Miſſiſipi, with ſome few exceptions, below the falls of the Ohio. In Kentucky, and about the Yazaro river, there are large tracks of unhealthy country, and in ſome other of the lower parts of the weſtern country towards Florida, principally near the rivers. And in Pennſylvania, Harriſburgh has always been noted for remittents and fluxes in the autumn, principally on account of ſome mill ponds; but this is partly remedied; but all the other interior parts of this ſtate, are ſcarcely exceeded in healthineſs, in any part of the world, and but rarely equalled, as is very evident from the appearance, and healthineſs of the inhabitants; and inſtances of longevity are as common here, as they are to be ſound any where; here the air is pure, ſeldom moiſt, cloudy or rainy: and Philadelphia, although ſo frequently viſited of late years, by peſtilential infections in the autumn, we can without heſitation aſſert, is generally as healthy as any other city of its magnitude; the infection we have no doubt at preſent, has been conveyed to it, as we hope to prove; and here it found a proper place for its propagation, in the cloſe parts of the town, principally from Fourth-ſtreet to the river, where the town is cloſely built. New-York and Baltimore are not inferior, it is probable, from all the information we can collect, to Philadelphia, in reſpect either of ſalubrity in their air, or agreeableneſs of their ſituations; but York is more incommodious in the narrowneſs of its ſtreets, which as it is increaſing ſo rapidly, on account of its eligible ſituation for trade, may prove an inconvenience if not remedied; Charleſton in S. Carolina, is as healthy as a place ſo cloſe can be, in a country ſo generally unhealthy, its being expoſed to the ſea air, is a peculiar advantage to it. In the ſummer the country is more healthy than the town; but in the autumn, the town is moſt healthy: this compariſon of healthineſs, &c. between the town and country; will apply in general to all towns and countries, unleſs when infections prevail. All large towns and cities, are hot and ſuffocating, in the warmeſt part of the ſummers; but as the cool weather begins to be perceived, in the evenings and mornings, and marſhy exhalations are going on in the autumn; the towns are always more unhealthy than the country. This rule prevails to very high latitudes on continents, eſpecially when the heats and conſequent exhalations, are greater than in iſlands.

We have always found September to be the moſt ſickly month in the year, and the next to it October, theſe are the moſt unhealthy months in all northern latitudes, &c. It is remarkable that the peſtilential autumnal, commonly denominated the yellow-fever, has never yet been communicated from one perſon to another, unleſs on board of ſhips, or in the cloſe parts of towns, or in hoſpitals, or priſons; this demonſtrates plainly to us, that it is not infectious, unleſs the air is ſtrongly impregnated with the effluvia, and this can ſcarce ever take place in the open country, neither is the typhous infection, readily propagated here, even in the towns.

We may notice in Sir John Pringle's obſervations, that he was always under apprehenſions of danger, from any cauſe which prevented ventilation; his great dread of the typhous infection, in the hoſpitals and priſons, appears to have been the cauſe of this: hence his averſion to the neighbourhood of woods and plantations; which we would ſuppoſe he carried to unreaſonable lengths. He might probably have ſeen remittents common between woods and marſhes, and laid the fault on the wrong cauſe. But wood has been obſerved, both before, and ſince his time, to be a very good defence againſt miaſmata. Lanciſci, who wrote fifty years before him, recommends wood in the ſtrongeſt terms, as one of the moſt effectual defences againſt the air of marſhes, and Pringle muſt have read this work, for he ſometimes quotes it.

Lanciſci quotes many former writers, in recommendation of the ſalutary effects of woods, when ſituated between marſhes, and towns, villas, or camps, &c. and alſo concerning the pernicious effects of deſtroying them; and we may add that the ſame obſervations, are often confirmed in the preſent times, in the United States; for the new ſettlements, where there is ſtagnant water in their neigbourhoods, generally become more ſickly, when the woods are cut down; for the moiſt ſurface of the newly cleared ground, is thereby expoſed to the rays of the ſun, with putrefying leaves of trees, &c. Elevated ſituations on the banks of rivers, are recommended by Pringle, for the ſame reaſons, why he reprobates wood: ventilation was his aim in both; but although this may be a ſafe-guard againſt infectious fevers, it will, we are fully convinced, be no defence againſt autumnal diſeaſes; but the very reverſe, as we have experienced in ſeveral ſituations, many remarkable inſtances, of which we remember, in the United States, particularly Peterſburg. Nor is Harriſburg, on a low ſituation, yet it is the moſt unhealthy town in Pennſylvania; and in all the ſouthern ſtates, the banks of the rivers are generally more unhealthy, than back from them in the pine woods; but there are many exceptions to this rule, we allow, where the banks of the rivers are dry, and no marſhes near, they are generally healthy; and the ſalt marſhes are never noxious, eſpecially thoſe over which the tide flows regularly; for fermentation has not time to commence in them between the tides. But the ſea air is a great preſervative, as far as it prevails, which may be about ten or twelve miles from the ſhore. We have often ſeen low ſituations, when dry, preferable to elevations, when in the vicinity of marſhes, and equal ly expoſed. We have from theſe circumſtances, been led to believe, that the noxious principle was rather of a volatile, than of a heavy nature, and more probably inflammable, than fixed air; it may for ought we know, be neither, or nothing but an effluvia, which hitherto eſcapes analyſis; but although it would be curious to diſcover, and ſeparate the noxious principle by itſelf; it is yet a queſtion, whether we ſhould be thereby rendered more capable of preventing its pernicious effects? But even to be certain whether it is heavier or lighter than the atmoſphere, would be a diſcovery of ſome import: but we ſhall leave it to future experience to determine, as we dare not be poſitive. Fixed air is known to be the moſt pernicious to animal life, and it attracts pure air very ſtrongly, and they are difficultly ſeparated; but although they are both much heavier than common air: we do not often find low ſituations, worſe than thoſe which are elevated, when both are equally near the ſources of the miaſmata.

When ſtagnant water, impregnated with vegetable ſubſtances, undergoes a fermentation; in the different proceſſes, both fixed and inflammable airs, are extricated. But whilſt there are any conſiderable quantity of water on the ſurface, it abſorbs the fixed air, until it is ſaturated with it; on this account, whilſt the ſurface of the earth is entirely covered with water, it never is pernicious, until it is dried up; ſo that the bare moiſt ſurface is expoſed. Fermentation is moſt rapid in a heat from 60° to 100°. and by the putrefactive proceſſes, vegetables are totally diſſipated into air,, all but their earthy parts: but either a very large quantity of water, or a frequent change of it, prevents theſe proceſſes from going on, and in either of theſe ways, the pernicious effects of vegetable decompoſition, may be prevented; for either much water, or a perfect dryneſs, prevents putrefaction.

It does not appear to be, by abſorbing the pure principle from the air, that fermentation produces its bad effects; otherwiſe, breweries, &c. muſt have been more hurtful; but this we never have known them accuſed of. When fixed air is extricated, and confined in veſſels, it lies on the ſurface of the fermenting liquor, but may ſoon be diſſipated and mixed with the ſurrounding atmoſphere, by agitation and ſuch means.

The Grecians appear not to have been totally unacquainted with the manner, in which the effluvia or miaſmata of marſhes is generated, and alſo the means by which it may be prevented, for it is related in hiſtory, that one of their generals with his army, being encamped near a low marſhy tract of ground, in the autumn, the army became very ſickly: but it was not convenient to remove the camp, it occupying an advantageous ſituation: through the marſh there had run a ſmall ſtream of water; which was dried up by the heat, and draught of the weather: but it being found on a ſurvey of the country, that a conſiderable river, which was in the neighbourhood, might be turned through the marſh, which being effected without delay, the whole ſurface of the marſhy low ground was covered with running water, and the noxious exhalations prevented; whereby the camp again became healthy, without the inconvenience of moving. This is a fact, in proof of the knowledge which the Greeks had of the cauſes, and alſo of the conſequences of marſh miaſmata; for otherwiſe both the cauſe of the ſickneſs, and the means of preventing it in this manner, would not have been ſo readily diſcovered; for Generals have been but men in all ages. But the Greeks were an acute, obſerving people, and there is no doubt, but they had collected this, as they did many other pieces of uſeful information, from obſervations. Finding ſimilar cauſes produce ſimilar effects, they would not fail to collect uſeful leſſons from every ſource; many inſtances of which are on record.

Warm climates are not neceſſarily unhealthy, although they frequently are ſo accidentally: for we find many very healthy ſituations, in warm countries, although emigrants, or other ſtrangers, muſt undergo a change in their conſtitutions, when they remove thither from cold climates; the human conſtitution has the power of accommodating itſelf to all climates, ſo as to bear them with but little inconvenience. But the change from cold to warm climates, is always attended with ſome dan ger, but moſt ſo after the age of maturity, in the young and ſtrong, who are the moſt numerous claſs of thoſe who are expoſed to it. The natives of warm countries, and others who have reſided for ſome years in them, very commonly enjoy good health. Although the inhabitants appear to be of more delicate habits of body; when we compare people in the ſame ſituations of life; as the mechanics, citizens, and labourers, of one country with thoſe of the ſame occupations in others. But although warm climates are deſtructive to many northern conſtitutions, they appear to afford the greateſt proportion of happineſs to man, in an uncultivated ſtate, of any other parts of the world; for there their wants can be ſupplied with very little labour; for the ſmall quantity of clothing they want, may be ſupplied with very little induſtry, and the ſpontaneous productions of the earth, ſerves for the greateſt part of their food; but in any other part of the world this is not the caſe; their habitations are eaſily conſtructed with trees; and on account of the ſimplicity of their living, and their free ventilation, with exerciſe ſeldom carried to exceſs, and no ſedentary employments. The inhabitants of tropical countries are, in many reſpects, the happieſt of mankind, and certainly, far exceed the inhabitants of the polar regions.

From ample experience, we have ſufficient reaſon to be convinced, that an unhealthy atmoſphere always produces a dark, or ſallow colour, and alſo a languor, and weakneſs, both in mind and body; the bile has been thought to be a cauſe of the colour, although it is not altogether like a jaundice. But the ſcarfskin is commonly affected by the direct rays of the ſun, which ſoon cauſes a viſible alteration in the colour of very white perſons; the ſecretion of bile is alſo greater, in thoſe who have lately arrived in warm climates, than in others; the reaſons of which we ſhall explain, when treating of billious affections; the ſkin contracts a bilious tinge, different from the ſun burnt colour. The brown colour appears to be owing, principally, to the ſubſtances with which the air is impregnated; for we find the inhabitants of all healthy warm countries, retain their white colour very well; particularly in ſmall dry, and healthy iſlands, or high ſituations on continents. There are ſome of the Chineſe remarkably white; they who are natives of high, healthy ſituations, in the northern parts of the country, but their colour is very different from that of Europeans, or their deſcendants in various parts of the world, it is a dead, or perfect white, without any mixture of the ruddy appearance of Europeans, whom they ſay are red men: but it has been found that either fixed, or inflammable air will change the colour, both of blood and muſcular fleſh from a red, to a brown, or duſky colour, and it never appears to impart that flow of vital ſpirits, which a froſty air does.

Whether this colouring matter, with which the body is impregnated in unhealthy ſituations, may be a cauſe of the endemic diſeaſes which prevails there, we are not yet certain: it however, affords a viſible indication of unhealthy ſituations.

The city of Waſhington, the preſent reſidence of the Federal Government, we muſt not paſs unnoticed, as it may excite the curioſity of others, as it did our own. Although this place has the name of a city, yet from all appearance, the diſeaſes of an open country are what we are to expect there, probably for many ages to come. All along from Tyber-creek, in the direction of the canal, which is laid down in the maps of the city, it has every appearance of being unhealthy, but principally, under the hill on which the capitol ſtands; both to the eaſt and weſt. From the Preſident's houſe, to near the eaſtern branch; the houſes on the ſouth brow of the capitol hill, we have every reaſon to ſuſpect will be unhealthy in the autumn; to the northward alſo, from the Preſident's houſe, there is a large extent of flat ground, under the hills, which form the northern boundary of the city, the ſoil here is a bluiſh loamy clay, on which the water lies after rain, until it is evaporated; the clay being ſo adheſive, as not to abſorb it, and as they are cutting down the wood here and every other part within the limits of the city, it muſt in future be more unhealthy than hitherto; the eaſtern branch would appear to be a healthy ſituation, on both ſides of it;

beſides it is an excellent harbour. A moderate plan of about a ſquare mile here, might poſſibly have been filled up, but the city never can: from the preſidency to George Town, is a healthy like place, this town is placed on a congeries of ſmall hills, and deep valleys, and is a healthy ſituation, and ſo is all the country to the north and weſt from this place.

The eſcape of inflammable air from putrefying vegetable ſubſtances may be proven by ſtirring up the mud at the bottom of ſome ponds in warm weather, by this means the inflammable air eſcapes in ſuch large quantities, as to take fire on the application of a candle, and to burn all over the ſurface of the water, or the bubbles of air which ariſes when ſuch mud is ſtirred up may be collected in a glaſs veſſel, by filling it with water and inverting it over the aſcending air, which will diſplace the water; but as inflammable is lighter than common air, to retain it, the mouth of the veſſel muſt be held downward, until a candle is applied to it, and it will burn. In ſeveral parts of the world there are ſprings containing inflammable air, there is one in the interior parts of Virginia, and another near Wigan in Lancaſhire in England, but probably the quantities of it may be ſo ſmall as not to be hurtful, as we have never heard of any pernicious effects from it. But the fixed air which is extricated in marſhes, eſcapes in the greateſt quantities, as we would be led to ſuppoſe, after the water is nearly dried up, and the bare mud is expoſed to the heat of the weather, or where there have been no depth of water: and it is in this ſtate that the vicinity of marſhes is always moſt pernicious, for then being moſt putreſcent, they give out all their noxious principles to the air. Mr. Orme relates in the account of his journey over land from India, that the Arabs take a cruel manner of revenge on the Turks at Baſſorah, for by breaking down the banks of the Euphrates, all the country is overflowed, but as it is by damming up the river they do this, (the Arabs occupying the mouth of it) as the river riſes it forces its way, by breaking through the dams, and leaves the wet ground expoſed to the heat of the ſun.

A peſtilential fever begins to ſhew itſelf, as the lands grow dry, by the evaporation of the water: and it commonly rages with ſuch violence, as to carry off many thouſands of the inhabitants of that city. The country of Bengal, whilſt the low ground is covered by the annual floods of the Ganges, and by the periodical rains, or high ſpring tides, continues tolerably healthy; but as ſoon as the water retires, and the earth begins to dry, the muddy ſubſtance left upon its ſurface, conſiſting of decayed vegetables, and other putreſcent bodies, begins to corrupt by the violent heat of the ſun, and raiſes up into the air a vapour, impregnated with various exhalations; and then the ſickly times commence, cauſed by the exhalations from the earth in this ſtate.

The overflowing of the Nile, puts a ſtop to the plague in Egypt, by its covering the low ground, and preventing the evaporation of putrid matters. Agues and remittent fevers, are much more common in the Fens of Cambridgeſhire, and Lincolnſhire, in very dry ſeaſons, than in wet years; becauſe in wet years they are covered, but in the dryeſt they are moiſt. The ſtates of Holland were ſo ſenſible of this, by experience, that in 1748, they laid the country about Breda, under water; and ordered it to be kept ſo until the winter, in order to put a ſtop to a ſickneſs which had ariſen, from the exhalations of half drained grounds. The nature of the ſoil, muſt likewiſe have a great influence on the health of its inhabitants; a moiſt ſoil always diſpoſing vegetable matters to putrefaction. The ſoil of ſome parts of Dutch Brabant, is a barren ſand, but water is every where to be found within two or three feet of the ſurface of the earth; and in proportion to the depth of the water, the inhabitants are healthy or ſickly.

It was many years ago remarked in an hoſpital in Jamaica, which was built near ſtagnant water, that common intermittents being brought into it, ſoon degenerated into malignant fevers, very dangerous, and difficult of cure; ſo that they were obliged to build another hoſpital, in a more healthy ſituation; and there the patients have a much better chance for a cure.

Remittent fevers, and dyſſentaries, ſeem to be nearly related to each other, and have the affections of the biliary ſecretion, for their common attendants; but they rage violently in ſome places, while in others, very little diſtant, they are never known; and it is ſufficiently proven, that this difference depends ſolely upon their different local ſituations, &c. with reſpect to ſwamps, and the courſe of the winds.

The letting out the water from the foſſes of fortified towns, has produced malignant remittents, which letting it in again, has put a ſtop to. The cutting down of vegetables, ſuch as wood, buſhes, reeds, hay, or rice, produces the ſame effects, as letting off the water, upon a double account; firſt becauſe their ſhade defends the moiſt ſurface in part, from the rays of the ſun. Secondly, becauſe vegetables contribute to purify the atmoſphere, by abſorbing the noxious airs, and when the ſun ſhines upon them, perſpiring out pure air. Attending to theſe principles, may be often of uſe: for although crops of hay, rice, &c. muſt be cut; yet the places where both of them grow, very often admit of being overflowed, eſpecially in the autumn: and if this was done, ſo ſoon as the crop can be carried away, and ſuffered to remain ſo until the winter; it would be a certain means of rendering their neighbourhood more healthy; and reeds, and wood ſhould be ſuffered to grow, and where there are none naturally, they ſhould, if poſſible be raiſed by culture, eſpecially about places which cannot be kept covered with water, and are marſhy, or wet.

It is not a little curious to obſerve the external appearance produced by the effluvia of marſhes, ſwamps, &c. upon the human body, even a few months reſidence near them, produce a viſible alteration; and it is the more obſervable, the longer any perſons are in ſuch ſituations: the colour grows ſallow; they become leſs cheerful, and have not that flow of animal ſpirits, which is common to the inhabitants of more healthy ſituations: and they grow more languid, and indolent: thoſe born in ſuch unfavourable ſituations, have all theſe characteriſtic marks, which are proper to their native ſoil, in a ſtill greater degree; for it muſt be allowed that the phyſical, as well as the political ſtate, muſt affect the inhabitants.

It may be taken as a general rule, that where the inhabitants of any diſtrict, have a good florid colour, the local ſituation of their reſidence is healthy: and where they have changed the red, and white, for a ſallow complexion, it is unhealthy. We do not know of any other place, where this is more viſible, than in the ſouthern ſtates, for it is very eaſy to know the rice planters, and others who live near the rice ſwamps, when in Charleſton, by their colour alone, from thoſe who live in more healthy ſituations. On the coaſt, it is generally a dry ſandy ſoil, and that, together with the ſea air, preſerves their colour; many of thoſe born, and educated in Charleſton, have a very fine complexion. But it is on a dry, ſandy ſituation, open to the ſea breeze, and nearly ſurrounded by water. The indigo planters live on the iſlands, and near the coaſts, and do not require ſwamps for their crops to grow on; they are generally healthy: but the people from the back country are both better coloured, and healthier than they are.

Doctor Crawford proved by experiment, that the black colour of the blood, was cauſed by inflammable air, in a concrete ſtate, which is generated in the animal body, and that it predominates more in a cold, than in a hot atmoſphere; this he proved by introducing inflammable air into the arteries of animals; which changed the red arterial blood, to the dark colour of the venal blood; and he thinks the reaſon why animals are no hotter internally, in a warm, than in a cold atmoſphere, is becauſe their blood does not, in the latter, collect ſo much of this inflammable air, in the courſe of the circulation; and conſequently does not attract ſo much pure air from the atmoſphere; nor indeed does it require ſo much to preſerve its properties. By Dr. Prieſtley's experiments it appears that pure air will penetrate through membranes, and communicate the ſcarlet colour, to the dark venous blood. But when the blood does not meet with pure air in the lungs, it is not ſo capable of ſtimulating the heart to motion, ſo that it grows more languid, in proportion as the animal is deprived of pure air; and if altogether deprived of this ſtimulus, its motion ceaſes, and death enſues; as in ſuffocation, by hanging, or drowning. This change of the colour of the blood, may be ſeen on that drawn from a vein, the ſurface acquires a ſcarlet colour, by attracting the pure air from the atmoſphere, and giving out its inflammable air to it; but the under part of it retains the black colour by not being expoſed equally to the air. Dr. Crawford thought the cauſe of the great heat in ardent fevers, and in caſes of inflammation, was owing to a greater quantity of inflammable air being formed, by a putreſcent diſpoſition in the parts; and conſequently their attracting more pure air, and ſetting free more heat at the ſame time.

Large woods are of great utility in guarding againſt the bad effects of the vapour of ſtagnant water and the like. This appears to have been well known to Lanciſci, at Rome; for in his works *(de nox. pallud. effluv.)* there are ſeveral letters in proof of the ſalutary effects of wood, and containing many reaſons, againſt deſtroying ſome woods, in the territory of the Pope, which had been propoſed to be cut down; he quotes a number of authorities againſt it, and relates many caſes where ſimilar proceedings, had cauſed great ſickneſs in towns, where for want of theſe precautions, woods in their neighbourhood had been cut down. Even a few trees he thinks, may in ſome places preſerve a houſe, and a large collection of wood will preſerve a village, or town in the country, from noxious effluvia, when ſtanding between them, by intercepting the noxious air: cutting down ſome trees and leaving others, is not ſo dangerous; this was a method recommended by him. The woods he ſpeaks of, ſtood between ſome large towns, and marſhes which were in their vicinity, and had been carefully preſerved, for many ages, with a religious veneration: woods he thinks, are greater preſervatives in ſuch ſituations than hills, as the winds eaſier ſlide over hills, than over woods, and is not ſo much mixed and agitated thereby: even cutting down an avenue through woods, towards country houſes, where there may be marſhes near the other ends of them, has often rendered houſes unhealthy, by opening a paſſage for the marſh effluvia. The ſame author takes notice of ſeveral towns in Italy, being violently affected with very malignant ſevers, from the overflowing of rivers, in the latter part of the ſummer; when the water they had left began to be dried up, from ouzy mud which they left behind; and ſome large ponds which were cauſed by the inundations, were with propriety adviſed to be let remain, until the winter, before they were drained, becauſe it had been known, that whilſt ſuch places were covered with water, they were very little hurtful, unleſs, as they dried up about their borders, leaving ſome ouzy ſurfaces; for it is always after the water is evaporated, that the neighbourhood of ſuch places becomes unhealthy; for while they are fairly covered with a ſheet of water, putrefaction cannot take place, to ſuch a degree; and of courſe noxious exhalations cannot be produced, for they are confined by the water. Healthy, or unhealthy winds, depends entirely on the ſtate of the country, they laſt paſs over. A north wind may be healthy in one place and unhealthy in another, according to the reſpective nature of the local ſituations they have laſt paſt over, and the ſame is true of winds from any other point of the compaſs; ſo that to know what winds are healthy, or the contrary, we muſt be well acquainted with the local ſituation of the place, and its neighbourhood; and then we may be able to form a judgment, of the nature of the different winds, by the conſideration of theſe circumſtances. By ſuch means the medical topography of any diſtrict, or country, may be elucidated, and brought to a ſcientific form; and this would often be very uſeful, more particularly in unfrequented countries: and be the means of guarding againſt unhealthy winds; ſuch inveſtigations may be particularly uſeful in chooſing the ſituation of a new habitation, or for fixing on ſituations for camps, or military ſtations, or forts; and alſo in guarding thoſe already ſtanding. By covering, or draining marſhes, planting trees, &c. between houſes, and marſhes, pools, or the like.—Standing upon an elevation, was ſometimes thought to be very uſeful, in an unhealthy neighbourhood, and in ſo far as it conduces to free ventilation and dryneſs, it may be of ſome advantage; but as inflammable, and (azotic) airs, are lighter than the common atmoſphere, they riſe upwards, ſo that the top of a hill near a marſh, is often a very improper ſituation; ſometimes worſe than beſide the marſh below; theſe obſervations are not confined to any particular diſtrict: they have been made in different quarters of the world, and will be found equally applicable to various ſituations again.

The draining of marſhes, or ponds, ſhould always be accompliſhed in the winter; for in that ſeaſon there is little or no danger from any exhalations, after they begin to dry, as would certainly be the caſe in ſummer, or autumn. When the Tiber had overflowed its banks, Lanciſci's advice was, to let the water ſtand on the ground until the winter, before they ſhould let it off: which was effected by drains made for that purpoſe; for experience had taught him the danger of drying up ſuch places, in the latter part of ſummer, or autumn: although the way in which he went about to account for the bad effects of theſe exhalations, are antiquated at preſent, for not being acquainted with the alterations which are produced in the atmoſphere by marſh effluvia, &c. nor the operation, or various uſes of the air in the animal œconomy; he had recourſe to the animalculæ diſcoveries of Lewenhoeck, the mania of the times, and accounted for all the appearances produced by marſh miaſmata, upon the human body, by its promoting the generation of animalculæ in the body. Hence mercury being a deſtroyer of worms, and the diſeaſes ſuppoſed to proceed from ſuch ſmall animals; calomel was uſed to deſtroy them, and to cure the diſeaſes of which they were ſuppoſed to be the cauſe; here a miſtaken theory directed the practiſe, and it was ſometimes ſucceſsful as a purgative, &c.

Small ponds of water and mud, which do not conveniently admit of being drained, may be rendered both innocent and pleaſant; by ſeparating the mud from their bottoms, and by that means making them deeper, and forming banks with it, about their borders, raiſing the edges of the banks, at an angle of about forty-five degrees ſrom the horizon, or where it is more convenient, to fill up their ſhallow edges with earth ſrom the neighbourhood, than either their own mud, it may anſwer as well. In caſe ponds have ſtreams through them, and are well covered with water, at all ſeaſons, ſo as not to have their muddy bottoms expoſed, they are not dangerous; by this means diſagreeable, noxious and ill-flavoured ponds, may be converted into very handſome ornaments to gardens, or other pieces of ground, and be changed into pleaſant pools, of a round, oval, ſerpentine, or any other ſhape, which they may moſt conveniently admit of; and as bruſh-wood and trees, add greatly to the beauty of ſuch pieces of water; willows, or other wood, which commonly grows well in ſuch ſituations, may be planted about them, for by their ſhades they are very uſeful in deſending their neighbourhood from the ſuns rays, whereby noiſome marſhes may be rendered innocent, and where they are large, and admit of it, from ſome places in them being raiſed higher than others, there iſlands may be formed, of any convenient ſhapes, and planted with trees or ſhrubbery; they may be rendered both ornamental and uſeful; ſuch improvements as this, though they may appear too laborious hitherto for America, yet they are by no means uncommon in the older, and well cultivated countries, ſuch as in China, or Europe.

But the principal intention in rendering ponds and marſhes harmleſs, is to prevent the fermentatory proceſſes, from going on, and conſequently the extrication of the miaſmata, or the gaſſes, as theſe are noxious to animal liſe, and are in greater or leſs proportions, and in a variety of combinations, they are extricated where the putrefactive proceſſes are carrying on; therefore, the air in their neighbourhood, muſt be impregnated with theſe gaſſes; and by this means, rendered unhealthy to the neighbouring inhabitants; every means, therefore, by which they may be made leſs hurtful, muſt be well worth the attention of medical gentlemen, and others who delight in the inveſtigation of cauſes, from their effects, and applying them to uſeful purpoſes, for the knowledge of the cauſes, may often point out a practical method of prevention or remedy, either of which merit our attention. As a moderate quantity of moiſture is moſt favourable to fermentation, and likewiſe, a moderate degree of heat, and where there are much vegetable matter, the fermentatory proceſs, always precedes the putrefactive: but animal ſubſtances do not go through the fermentatory proceſs, but run directly on to the putrefactive decompoſition, and and give out much of the azotic and inflammable airs; but there are commonly inſects, and reptiles of different ſpecies, harbour and live in ponds, and marſhes; which die as the water dries up, and putrefy; therefore, there are commonly a mixture of both the animal, and vegetable putrefaction in ſuch places.

By this view of the ſubject, we ſee, that in order that the noxious effluvia may be prevented from being extricated, the whole ſurface of ponds, and marſhes ſhould either be kept totally covered with water at all times, unleſs in cold froſty weather, or whilſt there is a heat above fifty degrees; or if they cannot be kept covered with water, keeping them conſtantly dry would anſwer nearly as well; for the rain, when it falls, is rather beneficial, than hurtful, in caſe it can be conveyed off, before it is impregnated with the vegetable ſubſtances by ſtagnation; as it helps to dilute, and waſh off thoſe offenſive ſubſtances, and renews whatever may be ſtagnant; on this account, frequent ſhowers, are a great means of preventing malignant epidemics in the autumn; and though they may contribute to cauſe intermittent fevers, or diarrheas, or perhaps dyſſenteries, by the moiſture of the air, which they cauſe, and the conſequent relaxation, and obſtructed perſpiration; yet they certainly are the means of preventing more dangerous ſpecies of diſeaſes; as malignant, and dangerous remittent fevers, and dyſſenteries, as we have found from our own experience, as well as from that of others. Vegetable fermentation, and its conſequence fixed air, appears, when united with moiſture, to cauſe agues, or intermittents, of the leaſt complex variety, but it is probable, that beſides impregnating the atmoſphere with fixed air, they may deprive it of a part of its vital air; for which the fixed air has a great attraction.

But however it happens, a predominance of noxious air and a deficiency of pure air, is the conſequence.

The putrefaction of animal ſubſtances, and its conſequent effects, in impregnating the atmoſphere with azotic, inflammable, or other gaſſes, and effluvia, uncombined, are often the cauſes of very malignant, and continued fevers, as has often happened to beſieged towns, and armies. A ſtratagem of a barbarous nature was uſed, for a purpoſe to this effect, and related by Mr. Gibbon in his account of the Saracens, when they over run Africa; one fortified place was impregnable to their warlike machinery; and as they did not chooſe to ſtarve it, to a compliance, by a ſiege, they therefore gathered all the inhabitants of the country round about, and murdered them, and left the dead bodies round the walls; by which means a violent fever, or plague, ſoon obliged the place to ſubmit, after moſt of its defenders were dead, and the remainder debilitated by ſickneſs and fatigue. A mixture of theſe two ſpecies of animal, and vegetable ſubſtances may probably produce remittent fevers, properly ſo called; and the ſtronger it is of the produce of the putrefactive decompoſition, the more the fever may incline to the malignant, or continued ſpecies; and on the contrary, the leſs of the putrefactive animal effluvia, and the more of the vegetable product there is in the atmoſphere, the nearer it may incline to the intermittent fever or ague; and in this manner it is probable all the intermediate varieties, and ſpecies of intermittent, and remittent fevers are produced, from the various combinations, and intermixtures, of theſe different cauſes acting together, upon different perſons, of different ages, ſexes, and conſtitutions. But we ſhall give our opinions of the natures of infections and contagions hereafter.

The Physical Effects of a vitiated Atmosphere on the Human Body.

PUTREFACTION, of either vegetable or animal ſubſtances, imparts certain effluvia to the atmoſphere, which in many caſes is eaſily perceived by the ſmell. Although this is not univerſally the caſe, even with the moſt noxious effluvia; any perſon who doubts this may ſoon be convinced of its truth, and of the abſurdity of ſuppoſing that any chymical, or pneumatic proof, can be adduced to the contrary, by obſerving, after the flowing of the tide over any place where putreſying mud, and other ſubſtance are mixed together, in warm weather; this may be ſeen every day, in the ſummer about our wharves; for there they will find gaſſes extricated in the greateſt abundances, which long before the names of hydrogene, azote, &c. were known, had been collected and burned. But whether, an eudiometer can diſcover it or not, it is not the leſs certain.

The effects produced by breathing a vitiated atmoſphere, are very ſenſibly perceived, by perſons of much nervous ſenſibility; ſome are ſo very ſuſceptible of the changes in the purity of the air, as to be ſoon affected with an uneaſy ſenſation of the lungs, whenever they ſit for ſome time in a room, with about half a dozen perſons in company, with the doors and windows ſhut, as in cold weather; and eſpecially when a large fire, and candles are lighted: but more readily in large companies. This is a diſpoſition with which we are acquainted by experience; having lungs extremely ſuſceptible of the variations in the purity of the atmoſphere, either in cloſe towns, or in marſhy, or other ſuch ſituations, where the air is vitiated, although never troubled with aſthmatic, or any other affections of the lungs. Cloſe rooms firſt produce a lowneſs, or depreſſion of animation, and an uneaſy erythematic ſtate, with obtuſe head-aches; to relieve which, walking out, or through the room, are commonly ſufficient; we have alſo often perceived a ſlight rigor, or chill, accompanied with a head-ache from walking about marſhy ſituations; and yet it is highly probable that no chymical, nor other phyſical means could detect any impurities in this air, although we may often ſmell it. But we muſt remember that the properties of animal life, are not to be explained either chymically, or mechanically, although often attempted formerly.

We may obſerve, however, that in country ſituations, beſides the free ventilation, perſons in buſineſs are apt to have more active exerciſes, and commonly ſome difference in the other parts of regimen; and when they remove to towns, it is commonly in order to attend to ſome ſedentary buſineſs, as ſtudy, writing, or other inactive employments; from which they commonly become low ſpirited, acquire an erythematic, or very ſuſceptible habit of body; and it is not uncommon for them, even to become hypochondriac, eſpecially if they have any cauſe to be uneaſy in their minds at the ſame time. But ſymptoms of this nature take place in every perſon, in ſome degree, after changing from a country, to a city life: and it is very apt to appear in their countenances, which becomes pale, and effeminate, inſtead of the ruddy, rural appearance.

In London, and other ſuch large cities, there can be no doubt that effluvia of various ſpecies, muſt contribute very much to cauſe fevers, in ſtrangers; which are principally of a catarrhal nature in the winter; for as to typhous, or low nervous fevers, they are by no means ſo common in London, as in country towns, or villages.

Something ſimilar to what takes place in cloſe rooms, on a ſmall ſcale, is, in ſome meaſure imitated in large, cloſe built, and populous towns; but in them, although freſh air is not ſo effectually excluded, yet partly by the excluſion of the air, by the numbers, and vicinity of the houſes; and alſo by various ſources of ſeptic effluvia, unneceſſary to enumerate here, beſides the reſpiration of men; to which may be added the increaſed heat, in hot weather: which in large towns, ſo far exceeds that of the open country, as to make the change very plainly perceptible, even to the moſt careleſs, and torpid obſervers.

Thoſe who have been brought up in the country, on removing to large towns, perceive this difference in the moſt evident manner, for the firſt year or two, eſpecially in the ſummer; this appears to be in ſome meaſure ſimilar to the effects produced by a change of climate; for the ſtate of the body, in either caſe, has to undergo an alteration, ſo as to be accommodated to its ſituation; this change we have known in ſome inſtances to be attended with a fever, ſo violent as to prove fatal to ſome of our acquaintances in London. The author had this alſo remarked to him many years paſt, by Mr. John Lewis, ſurgeon, in Half Moon Street, Piccadilly, London.

An air impregnated with ſeptic effluvia, or even with moiſture, depreſſes the mind, and alſo prediſpoſes the body to ſickneſs: ſo that in low, and unhealthy countries, we rarely ever find the mental faculties raiſed above a mediocrity; becauſe both the phyſical, and mental faculties, are impaired by a vitiated atmoſphere; this effect is probably more plainly to be perceived in ſome unhealthy diſtricts in the United States; particularly all along maritime parts of the middle and ſouthern ſtates: where we believe the effects of local ſituations are as viſible, as in any part of the world, in the ſame ſpace of time: and the lower parts of Virginia, are not exceeded in this reſpect by any part of the Carolinas, or Georgia.

The inhabitants of dry, hilly, and mountainous countries, are generally endowed with greater mental capacity, as well as activity, and ſtrength of body; than thoſe of flat low countries; for as the native character, is imprinted in early youth: ſo there is no doubt that the mind, as well as the body receives laſting impreſſions from the early ſurrounding objects.

Could we determine the diſtance to which the noxious exhalations of marſhes may carry their deleterious effects, and the moſt effectual preventative means, it might be of much utility; but this appears to vary according to the extent of the ſurface, and the ſtate in which it is; for a ſmall pond will be very deleterious in its own vicinity, if there are any houſes near it, as within a few hundred yards; and may not hurt much at half a miles diſtance, or much leſs, in caſe any hill, or riſing ground intervene. But wood excels all other defences, except perhaps, inhabited houſes: for one end of a ſmall village is often healthy, whilſt it is ſickly in another; but a ſmall ſurface only affects ſcarce a mile in diameter about it, by its exhalations being ſoon blended with, and mitigated, by the ſurrounding atmoſphere. A large ſurface of marſh may carry its pernicious effects many miles; we have very evident reaſon for judging, that the great diſmal ſwamp near Norfolk, in Virginia, affects the health of that town, and neighbourhood conſiderably, although the main body of it is at leaſt twelve miles diſtant; for whenever the wind comes in that direction, in the ſummer, it is of the moſt ſuffocating, and debilitating nature to be found in any part of the world; although there are wood between them in abundance; but beſides that ſwamp, the winds which blow over it, alſo paſſes over a great extent of a flat, and unhealthy country. But in all the Southern States, the ſea, or bay ſhores, are far preferable to inland ſituations; the air from the water, is exhilirating, and its ſalutary effects are very evident on the inhabitants, as well as on invalids, who reſort there on purpoſe.

The influence of local ſituations on the phyſical nature of mankind, is too obvious to eſcape any obſerver, who will uſe his own ſenſes, and his reaſon, without bias, or prejudice; ſo that we cannot but wonder that even ſpeculators ſhould deny it; however in the event, ſober ſenſe, and reaſon, will ultimately prevail in this, as well as in many other frivolous conteſts, only by turning men's attention to them.

The body, and the mind, are both much depreſſed in a warm, and moiſt atmoſphere; for, the air taken into the lungs does not afford the pabulum vitæ, or oxygene. The effects of a dry, clear, and pure air, on the contrary, even although much above the medium temperature in heat, are exhilirating, and conducive to health; and we may ſay the ſame of a cold, dry and pure air, as in froſty weather: every perſon in the temperate climates, knows from experience, how much more agreeable and healthy a froſty air is, than a cold moiſt air; for when there is much moiſture blended with the atmoſphere, it acts more ſpeedily as a conductor of heat from the body, than when it is dry, as may be obſerved here in the times of N. Eaſt winds, in the ſpring every year, as they are the moſt remarkably moiſt and cold of any winds we experience. Cold and moiſt air produces catarrhal affections, ſuch as coughs and colds; and when theſe are neglected, ſometimes even conſumptions, or catarrhal fevers, &c.

Clear, froſty weather, prediſpoſes to inflammatory affections; but this is after its continuance for ſome time, particularly in the robuſt, &c. for any variation requires ſome time (commonly about two or three weeks) to produce its effects on the body. A clear, dry air, promotes chearfulneſs and animation, although it is warm. It is remarkable that our winds from the weſt, and all round to the north, are generally dry and cold—in that they partake of the properties of the countries over which they paſs; and the wind from the ſouth to ſouth-weſt, is commonly warm and ſultry, or depreſſing.

As for an eudiometer or any other apparatus, diſcovering different effluviæ of vegetable, or animal origin, it is probable that we might as well expect to diſcover it by mechanical, as by any pneumatic inſtruments; for although we may diſcover the heat, weight and moiſture of the air, yet we are very ſenſible of effluvia in the air, which no inſtrument, other than the olfactory nerves (of the noſe) can diſcover; and of taſtes, which no chymical experiments, we doubt ever will diſcover. The ſight cannot detect ſmell, nor the ear colours, although animal ſenſes, and very extenſive ones; and it is apparent, that there are many noxious ſubſtances may float in the atmoſphere, or be conveyed by contact, which we have no ſenſe appropriated to detect, although that of ſmell certainly comes neareſt to it; for we have often perceived infectious diſeaſes by the ſmell, when well acquainted with them, particularly the typhous fever; and in ſome meaſure, but not ſo eaſily, the peſtilential or yellow fever; but no other means than actual experience, ever will demonſtrate the proper actions of any ſubſtances on animal life, whether in a healthy or morbid ſtate, either elementary or medicinal. Some of the more obvious gaſſes, as fixed air, and the mineral poiſons, may be detected a priori; but even the animal poiſons cannot be diſcovered by chymical analyſis, neither can the vegetable.

THE
NATURE
OF
INFECTION.

DR. BISSET, on the diſeaſes of Great Britain, writes, that about the middle of July, the inflammatory diſpoſition generally gives place to the bilious, which is more or leſs prevalent in the latter part of this month, and in Auguſt and September, in proportion as the weather is more or leſs dry and ſultry; but if towards the latter end of July it is very warm, cloſe, and moiſt, the bilious diſpoſitions will be combined with the putrid, or petechial, and generally with a catarrhal and dyſſenteric diſpoſition; indeed the petechial, and miliary fevers, which prevail from the influence of the weather, and are propagated almoſt wholly by infection, are uſually generated by changeable weather, with a prevalent moiſt temperature of the air, and ſoutherly winds, and are generally catarrhal, or attended with more or leſs of a cough, pain, or obſtruction of the breaſt; provided the affection which is the chief cauſe of the fever, is not determined in a great meaſure to the bowels, ſo as to give riſe to a diarrhea, or dyſſentery, as is not unfrequent, eſpecially towards the autumnal equinox, when the morbid humour is determined inwards by the external cold, and a peculiar tendency to the inteſtines.

In ſome inſtances the affection is generally diſperſed through the habit, and gives riſe to wandering pains, ſo as to cauſe fevers more or leſs rheumatic: but if nervous and inflammatory fevers prevail, betwixt the vernal equinox and the ſummer ſolſtice, the bilious and malignant fevers in the autumn, will be in a great meaſure rheumatic, and in many inſtances nervous, and eryſipelatous, and the diſeaſes ariſing from theſe prediſpoſitions, will often be exceeding obſtinate and dangerous; eſpecially if the original cauſe is productive of infection, from the effluvia of patients under malignant diſeaſes; or if the antecedent diſpoſitions of the body, augmented by the forementioned local, or accidental cauſes; or by living low, on coarſe, indigeſtible, or unwholeſome food; or breathing a cloſe impure air, in a crouded, unhealthy town; or by having the ſpirits ſunk by fear or anxiety—under theſe circumſtances, a moſt malignant epidemic fever may ariſe, without the aid of any imported infection, from other places: but ſuch a fever when once begun, will admit of being propagated by the effluvia of the ſick, ſo far only as to become epidemical, in ſuch places only, whoſe inhabitants are in a great meaſure prediſpoſed thereto by ſimilar cauſes. When ſuch malignant fevers are epidemic, and very fatal in populous towns, the atmoſphere of thoſe towns will become much vitiated, by the effluvia of the ſick, and unburied dead, and other putrid and excrementitious exhalations, ſo as to produce infections, which ſo often prevail in cloſe and populous towns, which ſtand on low ground, or within the influence of the vapour of marſhes, and are much crouded and dirty, after a continuance of warm weather. All theſe ſtates add to the malignancy of the diſeaſe, and cauſe an atmoſphere ſo impure, as will affect ſtrangers who remain but a ſhort time within its influence; but after their return home with the diſeaſe, provided they live in ſalutary villages, they will not propagate the diſeaſe in thoſe places, unleſs the inhabitants are prediſpoſed in a great meaſure to malignant fevers, by the ſtate of the atmoſphere, or from ſome other cauſe; but they will more readily infect perſons who live in the ſame houſes with them, or ſleep within the influence of the effluvia of the ſick, or are very often near them, and ſuſceptible of the diſeaſe; but it will rarely affect thoſe who only tranſiently viſit the ſick, and do not live within its influence, provided they are not naturally of a delicate frame of body, with an acute ſenſe of ſmelling.

We hope that no medical man of information, will deny that infectious fevers may be generated, in any part of the world; where ſeveral people are crouded into a ſmall ſpace, and are at the ſame time low-ſpirited, and live in a low, dirty manner. Some members of the faculty hitherto deny that any fevers become infectious, in any caſe whatever; but as we are convinced of the effects of infection experimentally, we are not even at liberty to doubt of it; and thoſe who do, we ſhall recommend to them a little more extenſive experience, common ſenſe and reaſon.

Although infectious fevers are not properly diſeaſes of warm climates, yet they ſometimes originate there, from confinement, and want of pure air, in crouded ſhips, hoſpitals, or priſons, or ſmall and ill ventilated houſes, in cloſe dirty ſtreets, or alleys of towns. But they are much more apt to break out after the greateſt heats are over, in the more temperate climates, when there is a prediſpoſition to remittents, or dyſſenteric complaints. And cold evenings, or mornings, which obſtructs the perſpiration in prediſpoſed habits, are frequently occaſional cauſes of theſe diſeaſes. And at theſe times, as the windows, &c. of the chambers of the ſick, are apt to be kept cloſe ſhut during the night, ſo that the confined air, becomes ſtrongly impregnated, with the morbid effluvia; which if the diſeaſe is violent, approaches near to a continued fever, in its type, it is the more apt to become infectious, as almoſt every ſpecies of fever does, from the ſame circumſtances, ſome do not even except the ague; the influenza is only an infectious catarrh, or cold.—And the conſumption we know, from repeated experience, of its infecting the attendants of the ſick, is as certainly infectious in warm climates, as any diſeaſes to which the human frame is liable; and the low nervous fevers of northern countries, under the names of typhous fever is remarkably infectious; eſpecially in manufacturing towns, and even in the open country; but more eſpecially among the poor, who are generally moſt prediſpoſed to it, from their modes of living, lodging, and regimen; as low ſpiritedneſs, and diſcontent, from want and oppreſſion; all of which contribute, both to generate, and to ſpread the infection.

As we muſt allow that ſo many ſpecies of fevers become infectious, it is not ſtrictly proper, to conſider them as a genus by themſelves; as they, like all other fevers, appear under ſuch variety of forms; only that they are more virulent when infectious, than otherwiſe. We only conſider them here, in order the better to illuſtrate the fevers of warm climates, when they contract an infectious nature; as there appears to be, in ſome inſtances, a combination of the malignant infectious fever, with thoſe of the remittent, autumnal fevers of temperate climates, which partakes of the ſymptoms, infection, and malignancy of both together. It would break the links of the chain, did we leave out this one, by which they ſeem to be united; for the more we know of fevers, either by practical obſervations, or from the works of the beſt practical authors, the more we are convinced, that there are all the intermediate, and almoſt imperceptible ſhades, and varieties to be found, from the ſlighteſt ague, to the peſtilential, or yellow fever, in all its greateſt violence; and we have no doubt, but the plague itſelf, forms the higheſt grade.—We chooſe the term of peſtilential, rather than yellow fever, for the ſake of diſtinction, as the yellowneſs is only accidental; becauſe common remittents are often accompanied with it; this, like many other appearances in fevers, is only accidental; for fevers, like human faces, have ſome things in common, or a general ſimilarity, but are every one different; and by an accurate obſerver may be diſtinguiſhed, as we ſee one epidemic, and endemic differing from others: and even the different individuals in any one ſpecies of fever, frequently differ from others, by innumerable circumſtances, of age, ſex, and temperaments. So that the moſt extenſive practitioner, may not have two patients exactly in the ſame ſituation, in any one ſpecies of fever, but ſo that ſome diſtinctions may be perceived, by an accurate obſerver; and ſo various are the appearances, in the ſame epidemics, that the oldeſt and moſt experienced practitioner, may not in the courſe of an extenſive practice have ever ſeen two perſons exactly in the ſame ſituation. Therefore, as the variety is ſo great, it would be endleſs to ſpecify every little difference, with a particular diſcriminating character; and the only reſource we have, is to divide them into genera, and to pay particular attention to their varieties, in the treatment.—Therefore, as the greateſt number of fevers ariſe from marſhy exhalations, and from human effluvia, as two great ſources, the latter of which we mean to treat of in this place. There are other cauſes of fevers, as cold, wounds, contagions, or other noxious impreſſions, which we ſhall not notice in this place, as not coming within our plan; although they likewiſe, on ſome occaſions become infectious from the common cauſe. Typhous fevers are moſt common in temperate, or cold countries; and although they may originate from various cauſes, at their beginnings, as bad proviſions, famine, or deſpondence, yet from whatever cauſe they ariſe, they all put on the ſame general appearances, and become the more violent, the more concentrated the infection is. I once ſaw the riſe and progreſs of one of theſe infectious fevers, in the winter of 1787-8, on board the Sandwich, flag ſhip, at Sheerneſs. Our buſineſs was to receive the preſt men, brought down from London, and from all the eaſt coaſt of Britain; being the only medical perſons on board, for near two months, although it was my firſt appointment in the navy; my attention was the greater. There were at firſt a great number of troubleſome coughs, and bad colds; but early in the winter a typhous fever appeared very infectious and mortal. The ſituation of preſt men on board a ſhip of war, it is certain, have all the cauſes for producing infection, dirty, diſcontented, often without beds, ill clothed, and even in want of freſh air, with many other circumſtances, ſufficient to produce infection any where: this fever raged for three months, notwithſtanding every precaution we could uſe, ſuch as fumigations, waſhing with vinegar, &c. That was while we were in a ſtate of uncertainty, whether we ſhould be kept in commiſſion or not: the men were taken, two, three, or four, daily, until the day we received orders to get ready for being paid off; and the univerſal joy and animation which that news diffuſed through the ſhip's company, diſpelled the infection at once; ſo that although we were three weeks from this, before we were paid off, there was not one taken that whole time: neither could this have been a mere pretence to get off, for we were well acquainted with the diſeaſe before this, ſo as not to be eaſily deceived in its ſymptoms, and appearances. And we are ſorry we had ſtill ſtronger proofs of its reality; for notwithſtanding every care which could be taken of them, by a phyſician on ſhore, together with myſelf, and my aſſiſtants; yet ſeveral of them died!!!

Infection may be conveyed three ways; but the moſt common is that in which it is diffuſed in the air in a volatile manner, as the effluvia of patients under fevers, or fluxes. It may alſo be conveyed in clothes, or any ſuch materials, of a porous nature, particularly wool, or cotton, in this manner it has been named fomites. But there are other ſpecies of infection which never are diffuſed in the atmoſphere; but are of a more fixed nature, as that of the ſyphillis, itch, &c. Theſe laſt are denominated contagions, becauſe they require actual contact for their communication; but they all appear to obſerve ſome general laws with reſpect to their propagation, and their effects on the human body. The ſmall pox is communicated in both ways; and with reſpect to them, a query ariſes at preſent, ſince the diſcovery that they are common among cows, and that they infect thoſe who milk them by contact, how it happened that they never appeared in this manner in Europe, until the eleventh century?

We know that there are certain laws, belonging to the animal œconomy, with regard to the operation of particular ſubſtances upon it; as medicines or poiſons, condiments, or foods; that by beginning with very ſmall quantities, and increaſing them gradually, the body becomes habituated to their uſe: therefore, they do not produce any very ſudden alteration on it; for it is well known, that there are many ſpecies of food, which in thoſe not uſed to them, will produce very ſenſible effects, cauſing ſickneſs, and various commotions in the ſyſtem, which through uſe, will become both agreeable, and nouriſhing; likewiſe vinous and ſpiritous liquors, do not produce any great effects on thoſe who are habituated to a moderate uſe of them: whereas even a ſmall quantity taken by one who never uſed any before, will cauſe giddineſs, and drunkenneſs; and it will require larger doſes to produce the ſame effect on any perſon, who has been only uſed to ſmall quantities before, as we may frequently witneſs. In this caſe, they appear to act much in the ſame manner as poiſons, by diſordering the animal œconomy, and preventing its functions, and very generally laying the foundations of a premature old age, chronic diſeaſes, and death, long before they would otherwiſe have approached the ſame perſons, had they obſerved the golden rule of moderation, in their gratifications!

Medicines are ſuch ſubſtances, as by being given in moderate quantities, and frequently repeated, effect ſome change in the conſtitution: for this purpoſe, we ſuppoſe two or three weeks as long as any one medicine or compoſition can be ſucceſsfully uſed, until it ſhould be changed for ſome other of the ſame claſs; but recourſe may again be had to the firſt, after a week or two, in caſe it is preferred; for this prevents it from becoming habitual. On this account, medicines never ſhould be made over free with as preventatives of diſeaſes; unleſs there is evidently a prediſpoſition to diſeaſe prevalent in the ſyſtem: for any change they can make upon one in full health, muſt be for the worſe; beſides, habituating the body to medicines or cordials, drams or bitters, when there is no neceſſity, is only a profligate abuſe of them, ſo that we cannot expect much efficacy from the ſame articles, when there is real need of them; becauſe the body is already habituated to their uſe, and even the moſt deleterious poiſons may, through uſe, become ſo far habitual, that they will not cauſe either ſickneſs, nor any material derangement, in thoſe who are uſed to them: in the ſame quantities, which would cauſe both ſickneſs and death, in thoſe who are not ſo accuſtomed to their uſe, as we ſometimes experience in the uſe of opium, &c.

The operation of infections, or contagion, on the human body, whether applied through the medium of the atmoſphere, or by contact, appears to be very ſimilar in their effects to poiſons, ſpirituous liquors, or medicines, although theſe laſt, when properly applied in a ſtate of diſeaſe, or of prediſpoſition, ſo generally produce ſalutary effects; for ſome infections are much leſs apt to affect thoſe who are gradually, or frequently uſed to, and become callous to them, than others; who have not been ſo accuſtomed to their action. This is a reaſon why phyſicians, and nurſes, and others who are frequently employed about thoſe who are ill of infectious fevers, are leſs apt to be taken with the diſeaſe, than others, who are not ſo habituated or accuſtomed to the infectious effluvia; and it is on the ſame account, that people in priſons, work-houſes, &c. where infection reſides, are not ſo apt to be diſeaſed by it, as others who have been uſed to a more pure atmoſphere, when they happen to be expoſed to the infectious effluvia; beſides this, there appears to be a prediſpoſition to receive the infection in ſome perſons, more than in others; and moſt people are more ſuſceptible at ſome particular times and ſituations, than in others. Thoſe infections, of which the conſtitution is ſuſceptible but once in a lifetime, as the ſmall-pox, and meaſles, appear to wear out all the ſuſceptibility, of the ſtimulus of their infection, at the firſt attack, and ſome never are ſuſceptible of it at any time; for there is about the proportion of one in twenty who never take the ſmall-pox, and none ever take them or the meaſles more than once: theſe infections the ſyſtem appears to become inſenſible to, by one application, and that ſuſceptibility never returns. There are diſeaſes likewiſe, which if they do not kill by the violence of the irritation, and inflammation which they cauſe, will go through their courſe, and leave the patients in health; whereas, the contagion of ſyphillis will not leave the conſtitution, but go on for years, and if it is not properly treated, it will cauſe a miſerable end at laſt; of this infection the conſtitution appears to be always ſuſceptible. But in varieties of infectious fevers, the ſuſceptibility of the infection appears to be worn off by the diſeaſe; for they will all go off naturally, unleſs they kill by the great irritation and conſequent inflammation, on the firſt onſet of the diſeaſe, by becoming inſenſible to the native, and weaker ſtimuli of the circulating fluids, and of the air in reſpiration. When the vital energy is exhauſted in the progreſs of the diſeaſe, it becomes extinct; but the ſuſceptibility to theſe infections, appear to return again, after the perſon has been ſome time in health. In theſe diſeaſes the continuance of the ſtimuli appears to render the conſtitution inſenſible, or callous to its operation, or otherwiſe they would never go off, or be cured; either by medicines, or by nature; if the morbid body could infect itſelf; but this ſtimulus, by becoming habitual, loſes its power of operating, until the body has been for ſome time out of the uſe of it, and has had ſome time to recover ſtrength and health; for although many relapſe into fevers from very ſlight cauſes, before they have quite recovered their ſtrength after an attack, yet this is always from ſome other cauſe, than infection—as from cold, improper food or drink, or from exceſſes greater than their ſtrength can ſupport. From theſe circumſtances then, we are authoriſed to conclude, that although the human body becomes, through habit, inſenſible to the impreſſion of infections, after being for ſome time expoſed to them, and if I may be allowed the expreſſion, callous to it, and loſe the ſuſceptibility of being acted on by uſe, which in ſome ſpecific infections, as we have obſerved of the ſmall-pox and meaſles, never returns; but in ſome other ſpecies of infections, it is very apt to return, after an interval of time. It may be remarked that people of an inflammatory diſpoſition, are more liable to be attacked by moſt ſpecies of infections, than others of an oppoſite habit; as weakly men or women, or the inhabitants of warm climates; and we often find that weakly children cannot be infected with the ſmall-pox, by innoculation; and thoſe who have been in the Eaſt, or Weſt Indies, long enough to get their inflammatory habits worn down, were not ſo ſubject to the infectious epidemic here in the autumn of 1793, and if taken, got eaſily over it. It was alſo remarked by Dr. Lining, that when fevers of the ſame ſpecies have prevailed in Charleſton; thoſe who were from the northern ſtates, ſuffered more by the diſeaſe, than others; and in tropical countries, it is always ſtrangers who ſuffer moſt, by their endemics: but the low nervous fever is an exception to this rule, as it attacks the weak moſt frequently.

There are many advantages to be gained by phyſicians being extenſively acquainted with the nature, origin, and progreſs of infectious diſeaſes; they may thereby find that in innumerable inſtances, they have broke out in beſieged towns: eſpecially when accompanied with famine, and in priſons, or hoſpitals, barracks, camps, or in crowded ſhips, and manufacturing towns; ſo that ſieges and famines, are generally accompanied with plagues, and they are aggravated by unſound proviſions, or from lowneſs of ſpirits; for in all theſe ſituations, there are cauſes of diſcontent, deſpondence, and neglect of cleanlineſs, which united with confined air, becoming ſtrongly impregnated with the noxious effluvia, it is no wonder that diſeaſes ſhould break out, and become infectious; and we have ſufficient reaſon to be convinced, that theſe two principal cauſes of fevers are often united.

As marſh miaſmata, and human infection, as we believe have been often united, when the autumnal fevers contract an infectious nature, as they may do, when under the forementioned circumſtances. And theſe two cauſes operating together, have been the reaſons of their malignancy, and untractable nature. It would alſo appear that the violence of the diſeaſe, is in proportion to the ſtrength of the infection, and the prediſpoſition in the habit of the patient, as age, ſex, temperament, &c. or the preceding operation of marſh effluvia, or other prediſpoſing cauſes, upon thoſe who are infected; ſo that their varieties are infinite. In the warm climates, there is ſeldom any ſuſpicion of fevers or fluxes becoming infectious, among thoſe who live on land, even by their phyſicians.

For private practitioners, either in the Eaſt or Weſt Indies, do not allow their diſeaſes to be infectious, whilſt at the ſame times, and places, practitioners on board of ſhips, or in hoſpitals, or attending armies, have found diſeaſes of the ſame origin become infectious; ſo that when a fever, or flux, breaks out in a ſhip, it will rage in her, attacking all hands, but principally thoſe who ſleep neareſt the ſick; whilſt at the ſame time, other ſhips lying near them, in every article the ſame, except the infection, may be almoſt totally exempt from it, eſpecially if they cut off all communication with the infected ſhips: theſe circumſtances are, we think, ſtrong enough proofs of thoſe diſeaſes being infectious; for were they merely endemic, and cauſed by the local ſtate of the atmoſphere, every ſhip's company under the influence of the ſame air, would be equally affected.

The reaſon why the fevers and fluxes of warm climates, are ſo ſeldom ſuppoſed to be infectious on land, while the effects of their infection are ſo often felt on board ſhips, is not difficult to be diſcovered. In warm countries, the inhabitants generally have their houſes built in an airy manner, often without ceilings, with large airy rooms, which are conſtantly well ventilated, by keeping the windows and doors open, and uſing every means to procure a ſucceſſion of freſh air through them. Therefore if one ſhould be even infected, in a crowded ſhip or hoſpital, and when taken ill, ſhould be removed to one of theſe well ventilated rooms, there would be no danger of his infecting any other perſon with the diſeaſe.

The peſtilential infection which ſo often rages in the largeſt ſea-port towns here, ſeldom affects the country, on account of the purity of the air, and ventilation. But where a number of men are confined to a ſmall ſpace, as they are in ſhips of war, without ſufficient ventilation, fluxes, or remittent fevers, will become infectious; and accordingly, moſt of the medical men, who have wrote on the diſeaſes of the Eaſt or Weſt Indies, from obſervations made on board ſhips, allow that theſe diſeaſes are infectious; whilſt thoſe who have made their obſervations on ſhore, as ſtrenuouſly inſiſt that their autumnal diſeaſes are not infectious. Certainly it may appear at firſt ſight, an inconſiſtent contradiction; but though theſe accounts are in exact oppoſition to one another, yet both may be adhering to the truth, ſo far as their own obſervations extended—their difference of opinion, being cauſed by their not having examined the ſubject, in different points of view; and on this account, relations of diſeaſes, their manner of ſpreading, treatment, and cure, are ſo differently deſcribed by authors, and practitioners of credit: whereas it is certain, had they not too often drawn haſty concluſions, from over confined ſpheres of obſervation, they might have been much nearer to each others opinions, as well as to truth. In our arrangement of fevers, we ſhall proceed from the moſt ſimple, and leaſt dangerous, to thoſe which are more complex, difficult of cure, and moſt dangerous.

In the firſt place then, we ſhall treat of ſuch as are the produce of vegetable putrefaction, cauſed by heat, or the effluvia of marſhes, or ſtagnant putrefactive water. Theſe are intermittents (or agues) and remittents; and ſecondly, thoſe cauſed by human effluvia, or infection; the mildeſt ſpecies of which is the (typhus mitior) low nervous fever, and then the (typhous gravior) or jail fever, all of which become malignant, in proportion as people are crouded together, and low-ſpirited; and as poverty, depreſſion, and a neglect of cleanlineſs, prevails principally among the poor, whether in the country, in villages, or towns. In the laſt place, we ſhall mention a ſpecies of fevers, which partakes of the natures of the two foregoing, from the productive cauſes, which are of courſe very complex, and untractable, as it appears to partake of the moſt malignant, and untractable nature of both, in their greateſt violence. The low nervous fever, we believe often ariſes without any infection, from the cauſes before mentioned, and bears ſome analogy to remittents; we may conſider it on this account, as the loweſt and mildeſt ſtate of this claſs; but it may become infectious, by the other cauſes above explained. A common ague, or intermittent, is the moſt ſimple and mild ſpecies of fevers; but may be aggravated, by an increaſe of the prediſpoſing cauſes, as agues turn to remittents, of more or leſs violence, approaching to the continued type, with an increaſe of danger. And the ſimple low nervous fever, may be combined with the catarrhal fever, and become more virulent by infectious effluvia, ſo as to form the malignant jail fever, or typhous gravior; and theſe two cauſes of fever may ſometimes meet together, with all their concomitant circumſtances, increaſed to a great height, as human infection, and marſh miaſmata; and then they muſt of courſe produce the moſt virulent, and deſtructive fevers, with which we are acquainted at preſent, as the peſtilential, or yellow fever.

From all that we can collect of the nature of infection, it appears that there muſt be ſome new, or uncommon circumſtances concurring to generate it originally; we may obſerve that it is the nature of all infections to become milder, or to wear themſelves out through a continuance: for all the infectious diſeaſes, of which we have accounts, have uniformly followed this courſe after ſome time. Were there no new ſubjects for the ſmall pox, or meaſles, they would ſoon become extinct. And were there no new ſubjects for the peſtilential fever in the Weſt-Indies, and no winters to make the inhabitants of the United States, again ſuſceptible of the infection, it would in all probability ſoon become extinct. People of diſtant countries who have never had any intercourſe before, meeting together, have often communicated, and we believe generated infections. Even people of the ſame country coming together, after having been long ſeparated, have ſometimes been known to breed infectious diſeaſes; which neither of them had before. Something of a nature ſimilar to this is mentioned by Dr. Lind, to have happened from mixing different ſhips companies together. And we have very great reaſon to believe that the ſyphilitic infection, was not known either in America, or in Europe, before the diſcoveries of Columbus. The doctrine is new, but there are ſtrong preſumptive proofs in its favour: for there are no accounts, traditional or otherwiſe, of its being either on the continent, or in the Iſlands of America, until they were viſited by Europeans. All the information, which theſe three centuries have produced, would rather confirm our belief, that the diſeaſe did not exiſt before this period in America; and we are ſtill more certain that it was not in Europe in its preſent form before this period.

The ſmall pox, and meaſles, alſo have been introduced into Europe from the other ſide of the world. We have often wiſhed that the Chineſe, and Gentoo annals, had been ſearched, in order to diſcover their origin, or their firſt appearance there. The firſt accounts we have of them, are thoſe of their appearance in Arabia, in the city of Bagdad, about ſeven hundred years ago. At that time the Arabians were a powerful nation, and carried on a conſiderable trade to India, and China; on all the Sunda, and Philipine Iſlands, the inhabitants of the coaſts, appear to be deſcended from the Arabs. What little religion the Malays have among them, is of the Mahometan origin; and ſome of them can trace back their pedigree near ſeven hundred years to an Arabic extract; as the Sultan of Magindino did, of whom Captain Forreſt gives an account. From the circumſtance of the Arabs trading to theſe countries at the time the ſmall pox, and meaſles firſt appeared in Arabia, it is highly probable, that they brought theſe diſeaſes from the eaſt: but whether they were known there long before this time, or were generated by this intercourſe, we have no account. But they might have been generated from milder diſeaſes, being agravated by their introduction among a people, who before were ſtrangers to them; as appears to be the caſe with all new infectious diſeaſes, but in this, as we cannot be poſitive, we only wiſh to ſhew the probability of it, that it may be inveſtigated in future.

The modern communication between diſtant countries, by means of ſhips, is a much readier manner of conveying infections, than caravans, or armies, for travelling by land is ſo much more tedious, beſides they could not ſo eaſily carry ſick perſons by land as by water; and there are more frequent opportunities to leave them until they recover, when on land, than at ſea.

The origin of the peſtilential fever on the coaſt of Africa, in the Bulam expedition and its introduction to the Weſt Indies, as related by Chiſholm, is to me a very ſatisfactory account of its origin and progreſs ; having ſeen the beginning of that unfortunate affair, whilſt in London, after my laſt voyage to India, this information was the more acceptable to me. A former friend of my own, who ſolicited me to become an adventurer in that ſcheme, may yet remember my predicting their fate from a little knowledge of the people, and of the adventure in which they were ſetting out. A number of people bred in London and other large towns, unacquainted with the climate, and even with the agriculture of their own country, at once intending to become planters on the coaſt of Africa, was an adventure almoſt too great, even for the moſt ſpeculative enthuſiaſts, but the mania of the times, the abolition of ſlavery, and the acquiſition of large and rapid fortunes, were urgent motives.

In the ſettlement at Siera Leona, which had been formed only a few years before this, there were no larger grants, than ſeventy acres of land given to ſettlers : ſome gentlemen adventurers wiſhing to become poſſeſſed of large eſtates, were diſpleaſed with the ſmallneſs of theſe plantations, and formed an aſſociation in London in 1791 ; and by ſeveral pieces in the news papers, and flattering proſpects of gain, diſſeminated in public companies, ſubſcribers ſoon became numerous. For 30l ſterl. each adventurer who went out was to have his paſſage, and ſix months proviſions after their arrival, and 500 acres of land : and for 60l. ſubſcribers who ſtayed at home were to have the ſame quantity of land ; ſo that by the end of December there were about 500 ſubſcribers. Two veſſels were chartered to carry out the coloniſts, and their utenſils, &c. which ſailed early in 1792. The iſland of Bulam 200 miles northward of Siera Leona, was to be their rendezvous. It is in latitude 18°. north, near the mouth of Rio Grande on the coaſt of Africa. This iſland and the neighbouring coaſt they expected to purchaſe of the natives, whom they alſo intended to hire as ſervants, to labour along with themſelves, in clearing the ground, building houſes, and cultivating ſugar canes, &c. Some of the adventurers were ſo enthuſiatic in this project, as to approach very near to a ſtate of inſanity. But when they arrived at the deſtined iſland, the natives were hoſtile to the meaſure, and killed ſome of thoſe who ventured on ſhore; ſo that they were obliged to remain on board their veſſels. Here they were in a ſituation the moſt likely to create infection, diſappointed in their golden dreams; not uſed to the climate, diſpirited, and in ſuch ſituations landſmen are commonly negligent of cleanlineſs; they were certainly fit ſubjects for diſeaſes. The other particulars as related by Chiſholm, of the diſeaſe, and mortality among them; which he had from ſome of thoſe engaged in the expedition, carry every appearance of being correct. But my admiration is excited by the pretenſions of thoſe who, from their ſpeculations at home, deny the reality of the peſtilential infection raging among theſe people, although atteſted by witneſſes preſent, that they loſt more than half their number by the diſeaſe; and introduced it wherever they went, in the Weſt India Iſlands, and in ſhips of war, &c. The indiſcriminate uſe of mercury recommended in this diſeaſe, even in the inflammatory ſtages of it, is another ſubject which my practice never led me to adopt, and probably never will, in any caſe where true phlogiſtic inflammation is preſent; in this we muſt yet differ in ſentiment, until conviction produces a change. In this expedition as well as in ſhips of war, military hoſpitals, or priſons, men were in a ſituation to breed infection, and in ſuch ſituations, we have no reaſon to doubt of its originating; for here are both the prediſpoſing, and occaſional exciting cauſes preſent.

From all that we can collect on the ſubject of infection, by experience, and reaſon, it appears that, in order to produce unuſual diſeaſes among men, it is neceſſary that they ſhould be placed in unuſual ſituations; was this not the caſe, uncommon appearances muſt ſoon become common—collective evidence alone is to be acquired in ſome caſes; reaſoning from effects to their cauſes, muſt be allowed, where ſenſible demonſtration is impracticable.—War, famine, &c. have put men out of their ordinary courſes of life; they have therefore been commonly accompanied with peſtilential, and other ſevere and uncommon diſeaſes. Ships of war, military priſons, and hoſpitals, on account of their being much crouded with men, are the moſt proper nidus's for infection. Beſieged towns have been commonly affected with violent infectious fevers; and in times of famine, peſtilences, &c. have commonly prevailed; as we find this to be the caſe in all times, and in various places; how can it be applied to the United States of late years? We entertain no doubt but infectious fevers might originate here, were the circumſtances neceſſary for their generation preſent; but no ſuch cauſes have been in exiſtence, theſe ten years paſt in the United States; therefore, from all the circumſtances conſidered, we are fully convinced of the importation of the infection. We alſo believe, that they are oftener generated on board of ſhips of war, tranſports and paſſenger veſſels; although they ſometimes break out in military priſons, or hoſpitals, eſpecially when in unhealthy ſituations, crouded with people not habituated to warm climates; from much reſearch and inveſtigation, we are perſuaded of this being the caſe, without prejudice, or partiality, to any opinions, or principles. On conſidering the circumſtances of the generation, and propagation of fevers; we are convinced that a peſtilential fever, ſuch as has repeatedly raged in different towns of the U. States, might certainly be generated here, as it is ſo readily propagated, did the circumſtances neceſſary for its generation exiſt, in theſe towns; but we are alſo firmly perſuaded that no ſuch circumſtances have exiſted here; therefore we believe that the diſeaſe was brought from where they did exiſt, on the coaſt of Africa, and in the Weſt Indies.— For could this diſeaſe have been generated here, at one, or more times, under ordinary circumſtances, it muſt have often happened before, as well as ſince its appearance here in 1793, and would not have been forgot by the inhabitants. Another circumſtance to be mentioned, is, where a diſeaſe is generated, it muſt, and always does begin gradually, and becomes the more virulent as it ſpreads; whilſt its ſeaſon continues; but an extraneous infection always breaks out with moſt virulence at firſt, and is mitigated by its continuance in the ſame place.

For ſcarce any perſon can infect himſelf, even with a contagious diſeaſe, as the ſyphillis, &c. nor will thoſe people, with whom we have frequent intercourſe, ſo readily communicate infection, as thoſe whom we meet for the firſt time. For habit obſerves its laws in this, as well as in every other caſe, or circumſtance. If we are habituated to noxious effluvia, we are not ſo readily hurt by it, whether it is of animal, or vegetable origin; this is an obſervation ſo common, that ſcarce any diligent, and rational obſerver of phyſical, or even mental occurrences will deny it; for it is allowed that all paſſive affections, loſe their force by repetition, or a continuance of the ſame impreſſions: ſo that a violent fever has been generated by priſoners from their cells, impregnating the air; and the judges, jury, &c. have been infected, and died, the priſoners having no fever among them at the time their effluvia was ſo active. Different ſhip's companies have generated fevers, by being mixed together, when at the ſame time there was no fever, in either of their former, reſpective ſhips. Strangers being brought together, who have never, or very rarely met before, will be very liable to generate infection, in other ſituations, as well as on board of ſhips: eſpecially where they are crouded together, as in beſieged towns. And however difficult it may be to prove in the preſent days, there are ſtrong evidences that the ſyphilitic infection was not known on either ſide of the Atlantic before Columbus's diſcovery of America! For here was a meeting of people, who never before had, either a direct or indirect intercourſe, with one another. And as all impreſſions are the ſtronger, in proportion to their novelty; this appears to be a ſtrong preſumptive reaſon, in favour of our poſition.—In order to prove this doctrine, we are not even under the neceſſity of diſcovering any new laws, or properties of the animal œconomy, for there is no property of animal life better underſtood than this; for all applications, to which the body has not been uſed, or habituated, whether as food, drink, air, or medicines, produce their effects in the ſtrongeſt manner, on their firſt application; this is the reaſon, why all changes ſhould be made very ſlowly and gradually: for many articles of regimen, or medicines, whoſe effects have not been experienced on the body, muſt be uſed ſparingly at firſt; or otherwiſe they may often do hurt; or even act as poiſons: and poiſons in very ſmall quantities may be converted, by good management, into ſome of our moſt powerful medicines: for all poiſons, except thoſe of animal origin, have been uſed medicinally; and many of our beſt articles of food, and drink, uſed to exceſs, by thoſe not habituated to them, will act as poiſons; and we are alſo well aſſured, that all infections will act on ſimilar principles, and laws; whether they require actual contact, as contagions, or infect through the medium of the air; ſo that the power of habit, &c. will explain much of the mode in which infections operate on mankind.

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An Answer to Dr. ———'s objections to our Origin of Infection.

Philadelphia, March 16*th*, 1796.

Dear Sir,

I AM much obliged to you for the freedom, with which you communicated to me your objections, to one part of my paper on the cauſes of the infectious fevers, eſpecially as it gives me a ſeaſonable opportunity of anſwering them.

This is an abſtruſe ſubject, and the reſult of obſervation is the only way we have of coming at the truth in it; as the making experiments on this ſubject, are ſcarcely practicable, and too dangerous to be attempted; neither need we regret it, as the opportunities for making obſervations, from natural cauſes and effects, occur as often as we could wiſh for them.

Your objection to my opinion of the infectious peſtilential, or yellow fever, being produced by a concurrence of the cauſes, of the worſt variety of the autumnal remittent, generated by noxious airs, and that ſpecies of fever produced by human effluvia, ſuch as is produced in jails, ſhips, or hoſpitals, or other dirty, cloſe, and ill ventilated habitations. You ſay that it is not philoſophical, to account for it in this manner; and you ſuppoſe that one cauſe would obliterate, deſtroy, or neutralize the other: we ſhall compare theſe opinions, with obſervations and experience, and examine candidly how far they are agreeable to facts; and adduce proofs in favour of that which we find neareſt the truth. As to its not being philoſophical, to inveſtigate cauſes from their effects, and to purſue truth wherever it may be found, in an obſcure ſubject, certainly it cannot be unphiloſophical. I know that Sir Iſaac Newton lays it down as an axiom, that, No more cauſes of natural things ought to be admitted, than are known to exiſt, and are ſufficient to explain their appearances. This we by no means contradict, but perfectly agree with him: as we believe it cannot be ſhewn, that any fewer cauſes ever does produce the ſpecies of diſeaſe under conſideration, than have been aſſigned, although it is often produced when they are preſent; but even if experience ſhewed it to be contrary to the commonly received opinions of philoſophers, it might in ſome meaſure correct philoſophy, as there are many important diſcoveries, both in philoſophy and medicine, ſince Sir Iſaac's days. But Newton did not pretend to preſcribe laws to nature, but confined himſelf carefully to obſerve her operations, and faithfully and diligently, to deſcribe them. The caſe is exactly the ſame with phyſicians; and whether they are general philoſophers or not, they may be allowed to deduce conſequence, from accurate obſervations, and their own experience, as well as from that of others, on whom they can depend, for accuracy and truth. But in my mind, he has but an indifferent claim to the title of a phyſician, who is not acquainted with all the information, which modern phyſical ſcience reflects, on the ſecret operations of nature, either in the human body, or in other animals, or in any other ſubjects. Your idea that marſh miaſmata, and infectious human effluvia, neutralize each other, is to me a novel doctrine, ſo that I could ſcarcely ſuppoſe you were ſpeaking as you thought, when you ſaid that theſe two great ſources of fevers could not operate in combination, but would deſtroy each other: this is an idea ſo very new to me, eſpecially with reſpect to fevers and fluxes; and ſo different from what I ever learned before, either from my own experience, or that of creditable practitioners, in ſimilar caſes, and in various parts, that I can view it in no other light, than as a gratis dictum, or an unfounded aſſertion; and cannot avoid conſidering it as rather unphiloſophical, according to the modern acceptation of the term, and therefore, more like hypothetical ſpeculation, than experimental ſcience.

Were we bound to ſimplicity, in accounting for the origin of fevers, even thoſe of the moſt ſimple nature, we muſt allow that there are prediſpoſing, and exciting cauſes: or both external and internal cauſes of all fevers; even the moſt common intermittents, and remittents, and that which is produced in priſons, &c. called the jail, or typhus fever, which is generated and propagated by human effluvia, and infection: now, to cauſe this laſt, there is commonly want of pure air, dirtineſs, deficiency of, or bad food, depreſſion of ſpirits, and diſcontent, or the effluvia from ſores, or dyſſenteries, &c. and beſides marſh miaſmata, there is a prediſpoſition in the body, and often obſtructed perſpiration, to excite remittents, and intermittents. Were there not prediſpoſing cauſes, exiſting in the bodies of thoſe who are taken, we might expect every one who is expoſed to the ſame cauſes, to be equally affected with the ſame diſeaſes; which never is the caſe in any epidemics. But let us have recourſe to experience, and inquire from authors of the greateſt credit, and veracity, accurate and extenſive obſervers. At the head of the liſt we may place Pringle, whoſe obſervations on the diſeaſes of the army, never were exceeded in any age, for accuracy of obſervation, although ſome parts of the practice is improved ſince his time; in his book, we find a great number of obſervations, to confirm what is advanced.—He always dreaded infection, when there were too many of the men in one hoſpital, whether they were ſent there with remittent fevers, or fluxes; and whenever theſe diſeaſes become infectious, through want of ventilation, &c. they alſo became very malignant, and complicated; and although the dyſſentery, or even putrid ſores, ſometimes cauſed the infection; yet they all degenerated into the infectious autumnal remittent. And both the dyſſentery, and the remittent fevers, he ſays, were frequently combined with the hoſpital fever. I have no doubt but when this laſt ſpecies of combination occurs, it will ſoon obliterate all the others, as Pringle mentions of the infection, which broke out in the village of Feckenheim, in the year 1743, from its being too much crouded with dyſſenteric patients, which by confinement, became as infectious as the plague, one half of thoſe taken, dying of it. Likewiſe after the battle of Dettingen, in June 1744, a great number of the men being taken with the fever at once, by lying wet in the rains after the battle; that fever became infectious, and raged violently. And both at Bruſſels, and Antwerp, in the autumn of 1745, he ſays the diſeaſes were complicated with the infectious hoſpital fever. And the ſame year, as the men were a carrying over from Holland, to England, to ſuppreſs the Scotch rebellion, ſome of the people, being taken with the remittent fever in the veſſels, it was ſoon communicated by the confined air, and the crouds, and converted into the infectious ſhip fever, of which near one half of thoſe taken died. And in a note, he ſays, the putrid effluvia of dyſſenteric fœces, are not only apt to propagate the dyſſentery, but likewiſe to breed the jail, or hoſpital fever, either with, or without bloody ſtools. And alſo that theſe diſeaſes rage moſt from Auguſt until October; and that then they become infectious, and are ſo much the worſe, if the ſummer has been hot, and the men in unhealthy, cloſe, marſhy ſituations. And the morbus hungaricus, he ſays, from Sennectus's account, was a compound of the bilious, (the name he gives the autumnal remittent) and the hoſpital fever, taking its riſe in the camp, and having its malignancy heightened from the foul air of the places into which the ſick were crouded. And Sylvius de la Boe, deſcribes a fever which raged at Leyden, in 1669, of the ſame nature, cauſed by a remittent becoming infectious. Pringle, we obſerve, uſes the terms, infection, and contagion, ſynonimouſly; and ſo does many other modern authors; it is nevertheleſs, an impropriety; for contagion means the communication of a diſeaſe by contact, as the itch, or ſyphillis, but fevers do not require contact, and therefore Dr. Lind has made that diſtinction. The epidemics deſcribed by Lanciſci, at Rome, and in other towns of Italy, one hundred years ago, began in the autumn, from marſh effluvia, and ſoon became infectious, from the numbers taken ill, and the confined air. In Rome the fevers raged only in that part of the city, next to the marſhes; and all theſe fevers became very infectious.

But we may come nearer home, and find that autumnal remittents will become infectious in populous towns; for whether infection is imported, or not, we ſee that theſe deſtructive diſeaſes will not take place, until the inhabitants are prepared to be affected: or ſuſceptible of, and prediſpoſed to remittents, or fluxes, by the heat of our ſummers. as we know was the caſe at Philadelphia, Baltimore, New-York, Norfolk, and Newhaven, and often in Charleſton; we will find that theſe diſeaſes always raged between July, and November, the very time at which remittents occur annually, and no one can well deny their being infectious; and whoever has ſeen the typhous fever, and the autumnal remittents, ſeparately, will be convinced that there is a combination of the two, in the yellow fever; as to Sir John Hunter's opinion, it is true, I know, with reſpect to ſome diſeaſes of very oppoſite natures, that they cannot affect the conſtitution at the ſame time, but the one will lie dormant until the other is over, and then break out; ſome inſtances of which we have ſeen. But fevers and fluxes are not ſo inimical to each other, they are nearly related.

AN

ANALYSIS

OF

MEDICAL SURGERY.

OF all thoſe who have wrote on the diſeaſes of warm climates, there are none who have paid any attention to this moſt uſeful part of the profeſſion. Neither ſhould it have been taken notice of here, had we not been in various ſituations and places, in which we have often witneſſed the want of a little information of this nature. For however much it is to be regretted, it is not every one who lives by the profeſſion; and often with the nominal appointments of ſurgeons, who are adepts in this art. An inquiry into the ſources of this abuſe, and the beſt means of affording a remedy, is in ſome meaſure connected with our ſubject. When this is the caſe, we cannot wonder that the more abſtruſe ſubjects, of ſearching out the cauſes, and connexions of the whole circle of epidemic, and endemic diſeaſes, and their connexions, have often been paſſed over in a very ſuperficial manner; for the phyſical nature of the human body has ſcarcely been taken notice of, by thoſe practitioners who have wrote on the ſame ſubjects.

Medical ſurgery, as a neceſſary branch of medical education, has been fully treated of, by Dr. Kirkland, in his inquiry into the preſent ſtate of medical ſurgery.— Alſo by Dr. Bœrhaave, who, although unfortunately no practical ſurgeon himſelf, yet he was ſo fully convinced of the neceſſity of underſtanding it, that he ſhews plainly, " that without it, nothing true or certain can be learned in the practice of medicine."—We have always eſteemed this ſentiment for its candour; and the more we learn of the principles and practice of the healing art, the ſtronger is our conviction of its truth, in a ſtill greater and more accurate degree than a theoretical knowledge of the ſubject, and in actual practice, for a courſe of years, before admiſſion to the internal practice, by this means ſtudents would learn the nature of the living human body, in the only true manner in which it can be ſtudied effectually, &c. The habits and temperaments of men, and likewiſe the effects of medicines on them, are more accurately obſerved by a ſurgeon attending to the dreſſing of ſores, &c. than they ever can be by a phyſician, in his formal viſits, particularly one who has never attended to theſe circumſtances. And as all ſcience, muſt be founded upon ſomething cognizable to the ſenſes; this, of all other purſuits, is the moſt proper for a phyſician to lay his foundations of medical practice upon; here in attending to inflammations, their varieties, and modes of cure, he may learn how internal affections of a ſimilar nature are to be treated; whether eryſipellatous, phlegmatic, or rheumatic, &c. and their different terminations, with the beſt means of obviating them, the difference between an erythematic, and a phlogiſtic (diatheſis) or diſpoſition.

Although plain demonſtrative anatomy has long been known accurately, theſe are ſubjects of much more importance. The properties of the vital principle; the phyſical nature of the human body, and of animal life in general, is yet in its infancy; for it is but lately that we have got into the mode of purſuing the ſubject experimentally, and rationally, from which alone, uſeful information can be found; the practice of ſurgery, is familiarizing us to the actions of the vital principles in the different temperaments, and in the different varieties of inflammations—Sores, or ulcers, &c. forms by far the beſt introduction to an accurate knowledge of the internal affections of the human body; this is one eſſential mode of inſtruction, together with the ſore, and after treatment, of operative ſurgical caſes, which occur. Here an accurate phyſiology is of the greateſt uſe, to direct practice, and it alſo reflects much light back, upon the vital properties of the parts, by which real information is gained: as from the ſight, we acquire a knowledge of the external appearance of a patient, and by the touch, we determine the ſtate of the ſkin; and by it can judge of the ſtomach, &c. as alſo of the pulſe, and its different ſtates; the effects of applications to ſores, and to the ſkin, &c. are lately found to be very nearly allied to their internal actions—Our late diſcoveries on the irritability, ſenſibility, vital energy, and inherent ſtrength, by means of ſome new experiments; and the doctrines of ſympathies, &c. are highly uſeful in the inveſtigation of the vital functions, ſane, morbid, and curative, all theſe are important diſcoveries. Theſe are the purſuits, which lead us in the right path to the cure of diſeaſes, and an acquaintance with the animal œconomy; this being an experimental method of purſuing theſe ſubjects, will fix every part of the acquired information in the mind; and by this means we become acquainted with the effects of conſtitutional varieties, and the different effects produced by external impreſſions.

A diligent inveſtigation of medical ſurgery, or the art of healing, leads us from the confined ſphere of a routine practice, to more extenſive views of the nature of the human body; this is neceſſary whether we uſe external or internal medicines. For without knowing the properties of the active principles, we cannot preſcribe with propriety; even the uſe of the knife, and of external applications, are but a ſmall part of a ſurgeon's duty. For although a clean wound, in a healthy perſon, will heal by retaining its ſides together, and excluding the air, by almoſt any ointment, or plaiſter; yet there are others which require different treatment; which can only be learned by actual practice in dreſſing, diſcriminating the different appearances they aſſume. Neither is this accuracy to be acquired by the common modes of hoſpital practice; for there are ſeldom time enough beſtowed on them, to pay proper attention to one tenth part of the number. And unfortunately whilſt the mechanical, or operative part of ſurgery, has been purſued with avidity, the ſcientific, or healing part, has been almoſt totally neglected, or left to the care of nurſes, or the patients themſelves. Some ſores require ſtimulant dreſſing, and others emolient, or ſoothing applications; but this is only to be learned by practice. An illiterate perſon might ſoon be learned to take off a limb, but it will require the abilities of the beſt informed practitioner to ſave one on many occaſions.—And we have ſufficient reaſons to be convinced that many limbs have been amputated, which might have been ſaved without the eclat of an operation. But where it is abſolutely neceſſary, to do it well, is commendable; but it is only by a proper attention to medical ſurgery, that this information is to be acquired.

No one can practice rationally, unleſs he is acquainted with the varieties of temperaments, &c. and the actions of the different medicinal applications, when applied to them. Therefore, it is impoſſible to be a good ſurgeon, without being a phyſician; neither can there be a good phyſician, without being in the firſt place a good practical ſurgeon. For ſtimulant purgatives, ſuch as jalap, and calomel, given in irritable habits, will increaſe the diſcharge from ulcers; ſo alſo, will yellow baſilicon, and other ſuch ſtimulants. But pultices, fomentations, and ointment of ſpermaceti, cerate, &c. will relieve them: and different ſtates of the body, require very different remedies, both external and internal. But although an illiberal diſpoſition is a certain criterion of a narrow mind, and profeſſional ignorance, yet acquirements do not always produce candour. The nature of the human body muſt be ſtudied on its own principles; and improvements muſt be ſearched to their origin, and traced down to the preſent times.

In caſes of mortifications, nothing but former practice can direct a perſon how to proceed; here living information is wanted, which language cannot communicate; it is exactly the ſame with injuries of the head, requiring the trepan, or not. A phyſician who has not been in the practice of ſurgery, giving his opinion in affections of this nature, is only a random proceeding. For language never can qualify him to judge in theſe circumſtances; and his viewing the part, or not, is a matter of indifferent formality. The appearance of ulcers often point out the ſtate of the body, and indicate the proper medicines. But where inflammations are preſent, the touch, and the ſmell, are often as neceſſary as the ſight, for this purpoſe. A perſon who does not know by the inſpection of a ſore, when ſtimulants, or ſtrengtheners, ſhould be uſed, will certainly do hurt, by uſing them indiſcriminately. Therefore, practical, and not ideal knowledge is neceſſary. Thoſe who lay the foundations of their practice on facts, have fixed principles to go upon, and are ſteady in practice, and not volatile and changeable.

Surgery being the moſt obvious part of the healing art, the practice of external applications leads us by analogy to the knowledge and cure of internal diſeaſes. Bœrhaave's ſentiment that unleſs Surgery was firſt learned, there could be nothing good or true learned in medicine, for it leads us from what is viſible to the more abſtruſe operations of nature. Irritation and inflammation of an internal part of the body, are ſimilar to the ſame when in an external part, and requires ſimilar modes of treatment, and there are the ſame varieties of Phlogiſtic (or true) and Eryſipelatoſe, (or ſpurious) inflammation takes place in the inward, as in the outward parts, and inward mortifications alſo proceed in the ſame manner, and are attended with the ſame ſymptoms, as when on the ſurface of the body, and of all the liſt of diſeaſes, there are ſcarce one natural occurrence takes place, in the inward parts, but has ſome one, or other analogous to it, externally: as the inward parts are compoſed either of muſcular, membranes, or vaſcular and nervous parts, as well as the outward parts, their various affections muſt alſo be the ſame; ſo that there can be no doubt, but learning the treatment of the diſeaſes of the viſible parts, is the only certain introduction to that of the inviſible, for otherwiſe we can only apply remedies by conjecture, a mode of practice which, it cannot be denied, is but too common. But an inflammation of the firſt paſſages, is not ſo eaſily diſcovered, as that of moſt other parts, it is attended with a ſmall, quick pulſe, and a fever. But in a cholicky, or ſpaſmodiac pain, there is no fever. Injuries of the ſubſtance of the brain, do not affect the pulſe much, but when the membranes are affected, it becomes hard, and quick.

For inflammations of the brain, or its membranes, of the lungs or their ſurrounding membranes, of the ſtomach, liver, inteſtines, kidnies, bladder, &c. being either phlegmonic, eryſipellatous, in all theſe parts, cauſes all the varieties of their inflammatory affections, and ſchirri of the liver, ſpleen &c. are of the ſame nature with that of external glands: and hectic, from abſorbed matter, is the ſame whether the ulcer is in the lungs, or on the ſurface of the body. But in other inward parts of the body, the abſorption of matter will not cauſe a hectic, becauſe of the excluſion of the air from the matter, without which, hectic never is produced. The application of infectious matter to the ſurface of the body, and the putrid matter abſorbed from ſores, demonſtrates their effects on the parts. The application of balſams and oils to ſores, produces much the ſame effects, as their internal uſe does; but the balſams are not to be uſed where there is inflammation and heat; but here the oils anſwer well.

Tar water has been famous in nervous coughs, and alſo G. myrrh, and gum ammoniac. And balſam of Peru, and eſſential oils, have been highly ſerviceable in nervous, or flatulent cholics, as well as in indolent ſores. Bark, or rhubarb, are uſeful in irritable and foul ſores; and mercury acts on ſores, as well as when taken inwardly: and the action of moſt medicines on ſores, bears ſome analogy to their effects on the ſtomach, &c. When emetics, or purgatives, or any other medicines, or ſtimulant food or drink are taken, their effects are ſoon viſible on ſores, to thoſe who pay a proper attention to them.

A woman of fifty years of age, had a putrid ulcer on her leg, which mercury rendered worſe; but bark reduced it to a healing ſtate. Another of the ſame age, of a phlegmatic habit, with a pale, torpid ulcer on her leg, took ſteel wine, with camomile tea twice a day; and with regular dreſſing, it ſoon recovered. Theſe are ſmall ſpecimens of the information which we obtain, by a diligent attention to ſores, in unveiling the whole animal economy.

Here it may be proper to remark, that the practice of ſurgery, as well as of anatomy, is the moſt proper introduction to the practice of phyſic; and that every ſtudent ſhould be confined to this part of the profeſſion, for a number of years, (ſay ſeven, or even ten) before they are permitted to practice, in the more abſtruſe parts of the healing art, where life and death are to be determined on: for how can a young man from the ſchools, having only read books, and attended lectures, be ſuppoſed competent to this arduous undertaking; even although he has ſerved an apprenticeſhip with a practitioner, and attended hoſpitals, which are by far the beſt introductory means, yet in either of theſe, they can be little more than ſpectators; nor indeed are they fit to be any thing more, unleſs in minor ſurgery, where as dreſſers, &c. they may be advantageouſly employed. Having the actual treatment of inflammations, bruiſes, wounds, ulcers, &c. here the effects of the injuries, and of applications, and the varieties of conſtitutions, are obvious to the ſenſes; and a knowledge can be acquired which language is incapable of communicating. Hence the advantage of experience—imbibing information from ſenſe, and reaſon; and its juſt preference to that from language, as this fixes it in the mind, in a manner which language never can equal, in its greateſt perfection, &c. And this is the only juſt ground I know for a diviſion in theſe parts of the profeſſion; that ſurgery ſhould ſerve as an introduction to phyſic, as the preliminaries, the principles, and properties of both are the ſame; and a proficiency in one ſerves for a proficiency in the other.

A general and particular acquaintance with the laws of animal life, in health and in diſeaſe, and particularly of the phyſical conſtitution of the human body, is eſſentially neceſſary to every one who would practice in any department of the healing art: without this information, it is impoſſible for any perſon to practice ſcientifically, in any one department of the profeſſion; but with it, and only common talents and application, ſurely it is not going too far to ſay, that one perſon may and ought to be qualified, in all the departments of this ſcientific art; for the practice of every ſingle part, has a tendency to elucidate, both the principles and practice of every other part of the profeſſion. As for example, ſuppoſe a perſon to have received a bruiſe, or a wound, it depends very much on the habit of body, and the phyſical conſtitution of the patient, how it will terminate; for if he is of an inflammatory, or hale, robuſt habit, an inflammation will enſue, in proportion to the cauſe, &c. but if on the contrary, he is of a weak, erythematic habit, ſpaſms, convulſions, or eryſipellas may ſucceed; or many other varieties of affections, in proportion to the cauſe, and the part injured. Here, and indeed every where, any one ignorant of human phyſics, muſt act his part as a ſurgeon, but very precariouſly; for it is eſſentially neceſſary, that the phyſico-chirurgeon, ſhould both be able to diſcover the preſent ſtate of the patient, and likewiſe the beſt means of curing his morbid diſpoſitions, of whatever nature.

Wounds—Incised, Contused, and Lacerated.

THE preſent performance is not intended for proficients in the practice of ſurgery, eſpecially for thoſe who cultivate this as a diſtinct part of the medical profeſſion: although we can venture to aſſert, that there are ſome particulars to be found here, which are not generally known even to them; its principal intention is for thoſe perſons, and places, where proficients in ſurgery are not to be found. Although popular books of medicine are to be found, almoſt every where, at leaſt ſo far as the Engliſh language is in uſe, yet there are none that we know of wherein this moſt neceſſary part of the healing art makes a part, if we except Dr. Buchan's popular work, who, not being himſelf a practitioner, his directions in this part of it, bear the marks of his little acquaintance with the ſubject—they are copied from others indiſcriminately; and as we have repeatedly witneſſed the deficiency of this branch of popular information, it is our wiſh to make an eſſay in ſupply of the deficiency. On board of veſſels which do not carry ſurgeons, and in numerous ſituations in the country, we are perſuaded that a little information of this nature, made plain enough for general readers, is very often much wanted, and not to be found in convenient time, and in ſome places not at all.

We ſhall begin with wounds, as being the moſt common affections we are apt to meet with; they are ſo generally known, that a definition would only add obſcurity to the ſubject. When the muſcular parts are wounded through the ſkin, and cellular ſubſtance, with a clean and ſharp inſtrument, the wound only requires its ſides to be brought together, and there retained in contact; with a covering of any mild ointment, in order to exclude the external air; and by this means a cure will be accompliſhed, which will take place in three, four, or five days, &c. This is, of all the methods that ever were deviſed for the cure of wounds, the moſt eaſy and ſpeedy; for there is in thoſe, whoſe habits of body are in a good ſtate, juſt ſo much inflammation takes place, as is ſufficient to produce the inflammatory adheſion, between the ſides of the wound: in the ſame manner as inflamed membranes, or any other ſurfaces of the body, will adhere and unite, when kept in contact: this is what has been called healing by the firſt intention. But there may be ſeveral obſtructions to this mode of healing wounds, as a bad habit of body, which will require the ſame medical treatment, as the appearances may indicate; ſo that if they are very inflammatory, bleeding may be neceſſary, and gentle cooling laxatives, ſuch as ſalts, caſtor oil, and antimonials, &c. and in caſe of great weakneſs, they may require ſtrengtheners and cordials; and where there is any thing of a ſyphillitick nature, it requires its own proper treatment, before the wound will heal, &c. One of the moſt alarming circumſtances which takes place in wounds, is the diſcharge of blood which follows, eſpecially where it is a large vein, or an artery is wounded: an artery is known by the ſtarting of the blood, keeping time with the pulſations; and that of a vein, by the uniformity of the ſtream; this diſtinction is neceſſary to be attended to, becauſe wounds of the arteries are much more difficult to ſtop, than thoſe of the veins; but in either caſe, the patient, or byſtanders, ſhould make a preſſure, as they may often ſee done after blood-letting, with the thumb on the part, and immediately apply ſome linen rag, or lint, if at hand. As the blood in the artery is always running from the heart towards the extremities, the preſſure ſhould be made in them, rather above the wound, and in the veins below it; the arterial blood is of a florid or ſcarlet colour; the venous more of a dark, crimſon colour. When an artery, or large vein is wounded, the patient ſhould be kept as quiet as poſſible; and if it is a large artery, he ſhould be watched whilſt he ſleeps, at leaſt for the firſt night, leſt it breaks open during ſleep. Nitre taken inwardly, in as large quantities as the ſtomach will bear without vomiting, is very uſeful in ſtopping profuſe bleeding, with quietneſs of mind and body, and a ſufficient degree of preſſure, properly applied to the part, by bandages, compreſſes, &c.

But a blunt inſtrument will bruiſe, as well as cut; and a rough, or ſaw edged one, will alſo lacerate or tear; and a ruſty one, may partake of both theſe inconveniencies, with the additional one, of leaving ſome of its ruſt in the wound; and brittle ſubſtances, ſuch as glaſs, may by breaking, leave ſome of their fragments in the wound; or even ſteel inſtruments ſometimes break. In this ſituation, the extraneous ſubſtances muſt be extracted if practicable, or if not, left until they are diſcharged with the matter, on ſuppuration; which in all theſe laſt varieties of wounds, muſt neceſſarily take place before they can heal.

In wounds when in this ſituation, or when it is impracticable to bring the divided parts into contact, or to retain them together, then a certain number of proceſſes muſt neceſſarily take place. A loſs of blood always happens in wounds, which penetrate the ſkin, in proportion to the ſize of the veſſels divided. Arteries diſcharge it with an uneven, or ſtarting motion, but veins in an uniform ſtream; an uniform preſſure is commonly ſufficient with dreſſing of dry lint, and flour, or agarick of oak, ſponge, or puff-ball; and if obſtinate, a piece of money, or of lead, may be bound on over the wound, &c. and the firſt dreſſing ſhould commonly remain on for three days, or even more in cold weather, pouring ſome brandy on the part, in order to prevent any bad ſmell, &c. and by the time that matter is formed, the dreſſings will ſeparate very eaſily; and as theſe wounds open by the retraction of the parts, there muſt be a growth of fleſh, to fill up the vacancy, and alſo of ſkin, for digeſtion, incarnation, and cicatrization.

There have been various directions given with reſpect to the particular parts wounded; but as we do not mean to go into a detail of particulars, we ſhall only conſider the nature of the parts wounded, in general. When a muſcular (or fleſhy) part is wounded longitudinally (or lengthways) the parts are eaſily retained in contact, by bandages; but it ſometimes happens that wounds are made right acroſs (tranſverſely), or obliquely ; when they are in either of theſe directions, they are difficultly retained cloſe, as the contraction of the muſcles draws their divided edges aſunder : in order to avoid this inconvenience, as much as poſſible, the limb, or part muſt be kept quiet, ſo that the muſcles may be as lax as poſſible, by which means a limb ſhould be kept bent, if the bending muſcles are wounded ; and extended, if it is the extending ones which ſuffer. In ſome, rolling the injured parts of the limbs, &c. with a bandage, is of great advantage : it ſhould extend as far as the joints, both above and below the wound, ſo as to prevent the contraction of the muſcles. Sticking plaiſters have been uſed for the purpoſe of retaining wounds together ; there are in Heiſter's ſurgery, ſome handſome plates, and deſigns of them ; however, in practice, narrow ſlips applied along ſide of one another, anſwer the beſt : firſt applying one end warm, and drawing the lips of the wound together, and then applying the other end, ſo as to retain them in that poſition.

There is a deteſtable practice followed by a certain deſcription of medical men, of ſewing, or ſtitching up, almoſt every wound. This we have ſeen and known, to have been done frequently, even in thoſe of the ſkin, and cellular ſubſtance ; that we have often been grieved when ſuch practice has came under our notice : when a few ſlips of adheſive plaiſter, would have anſwered much better, without cauſing any ſuch unneceſſary pain ; for proper bandages and plaiſters rightly applied, will ſeldom ever fail, unleſs in tranſverſe, and deep wounds of the muſcular parts, or tendons, which rarely occur : but even in contuſed, or lacerated wounds, or ſuch as are made by blunt, or rough edged inſtruments, it will be of great uſe to retain their ſides as cloſe together as may be, (but this will be better performed without ſutures, than with them,) ſo that adheſion may take place in part, and the ſuppuration will be the leſs, and the ſtages of the formation of matter, filling up, and ſkinning over, may be the ſooner accompliſhed : which in thoſe of good habits of body, will proceed uniformly, from the beginning to the end, in proportion to the magnitude of the wound, but when they aſſume a foul ſtate, we may treat them as ulcers.

Although in a recent wound taking place, in perſons of good habits of body, the blood anſwers better than any balſam; and in the advanced ſtages, when good matter is formed, there may be no other application neceſſary, than dry lint: yet the native balſams, and oils, may often be of great advantage, as when there are great pain, inflammation, and a dryneſs of the wounds; olive oil poured into them, or the lint ſoaked in it, gives immediate relief; balſam capivi, will anſwer better, where there is a torpor, with a livid colour of the parts; and if there is much foulneſs, &c. oil of turpentine is uſeful.

There have been varieties of ointments in uſe for the cures of wounds, almoſt every nurſe, and ignorant pretender have their own peculiar compoſitions, which muſt be ſuppoſed to have ſome peculiar virtues, unknown to all the world beſides; and of courſe the compoſition of them muſt be kept ſecret. Theſe good people little know, that wounds will heal by the proceſs of nature if not diſturbed; and that every ſubſtance in nature have been, at different times tried, in almoſt every poſſible manner; and that medical men of ſufficiently extenſive information, can find their effects in medical books. We here mean thoſe who go beyond the elementary ſurface of the profeſſion, who read practical authors, and digeſt them properly.—And who inſtead of confining their courſe of ſtudy to two, or three years; ſtudy for twenty or thirty years, and trace the ſources of practice through thouſands of authors, down to the preſent times, and compare this with their own practice.

In healthy wounds all that is required of the ointment is to exclude the air, without doing injury; therefore it ſhould be of a proper conſiſtence, neither too ſoft, nor too hard; for where other qualities are wanted, ſuch as medicated applications, we muſt have recourſe to the balſams, and oils; becauſe the ointments are only meant to cover the ſurface, and to keep it ſoft, and eaſy; a few varieties of them may therefore anſwer.

Oil of turpentine is very uſeful where there is a livid, inactive, and foul appearance of the parts; and in all caſes where there an indolent, torpid, or inactive diſpoſition of ſores; in this ſtate, ſtimulant applications are abſolutely neceſſary, to the parts immediately. Sometimes in torpid habits, wounds aſſume a whiteiſh, lax, or flabby appearance, though not foul, or diſcoloured; in theſe caſes emetics, and ſtimulant cathartics may be given: and alſo oil of turpentine, or what is milder, balſam of capivi, applied to the part. The drying and ſtimulant powders, as rhubarb, bark, &c. have been in uſe; but unleſs, in the act of ſkinning over (or cicatrization) we have no high opinion of any powders. Blue vitriol, and red precipitate, are ſometimes uſed in this form, to take down luxuriant, or fungous fleſh; but lunar cauſtic anſwers better in general—it is alſo one of the moſt effectual applications, in deſtroying the diſeaſed action, and the morbid poiſons of corroſive, and other ſores, ſuch as that of chancers, corroding ulcers, and even the animal poiſons, as that of a mad dog, viper, &c. And from the different modes of action of theſe ſtimulant corroſives, and cauſtics, theſe cauſing pain, ſmarting, and increaſed action; and that of the bland oils, or balſams, we may be led to determine the different caſes, in which they are neceſſary, from the habit and preſent ſtate of the patient.

In wounds, we are to attend to the ſtate of the habit of body, and temperament of the patient; by this means we may trace the cauſes of any deviations, to their proper ſources, and conſequently the beſt means of remedying, or obviating them. In healthy perſons, it is the regular proceſs of nature, which heals wounds; and this will always be accompliſhed where there are no obſtructions in the way; but it often happens in young, ſtrong, full habits, that the inflammation runs too high; in this ſituation, it muſt be leſſened by blood letting, unleſs enough has been loſt by the wound; and gentle ſedative or cooling laxatives muſt be uſed, ſuch as ſalts, &c. But if the patient is over weak, ſtrengtheners, nouriſhing food, and bark may be uſed, and are often indiſpenſibly neceſſary: and in caſe of any acrimony, or any cauſes of irritation being preſent, ſuch as the ſyphilitic, or any other virus they are to be treated in the manner ſuited to their natures.

When luxuriant fleſh riſes higher than the natural ſurface of the wound, it muſt be touched with lunar cauſtic, blue vitriol, or any drying powder, ſuch as calamine, rhubarb, or bark, and covering it with dry lint, commonly repreſſes it.

There is a great analogy between the internal uſe of the oils, and balſams, and their external applications to ſores; they appear to allay irritation much in the ſame manner, in both ways of application, by ſoothing the parts, and ſheathing acrimony; in this manner the oily mixtures, &c. allays dry, tickling, or irritating coughs, and even overcomes the irritation of ſome corroſive poiſons; and warm milk, and diluents, appear to be very ſimilar in their modes of action, by diluting, &c. And fomentations and poultices, which we have often uſed to old ſores, where no other applications appeared to produce any durable effects, are well known to eaſe pain, and probably to produce a new mode of action, in the morbid parts, and conſequently a healthy diſpoſition. The application of ſtimulating ſubſtances alſo, to ſores, produce effects by their ſtimulating properties; very ſimilar to thoſe produced on the ſyſtem in general, when applied to the ſtomach; for in both they quicken the torpid energy, only that, as ſo many parts ſympathize with the ſtomach, it affects the ſyſtem more generally; the action of the ſores is more local, although other parts commonly ſympathize with diſeaſed parts, eſpecially with the irritable and leſs ſenſible viſceras, as the lungs, liver, ſpleen, &c.

There have been various charms, incantations, &c. in uſe for the cure of wounds. Of theſe we may mention one mode of keeping ſores in a good humour, by paying particular attention to the inſtruments with which they were inflicted; oiling and cleaning them daily, and this part of the buſineſs was to be done by a proficient in the art; whilſt at the ſame time directions are very ſagaciouſly given to the wounded perſon, himſelf, to keep the wound clean, and to dreſs it daily with ſome peculiar applications. This laſt part of the proceſs, we have no doubt, is the moſt uſeful part of the means; for had the cleaning of the weapon been practiſed before the infliction of the wound, it would certainly have been very uſeful in the cure; but after this, we cannot ſuppoſe there are any ſympathy between the wound, and the inſtrument, ſo that the care of this, is only a piece of mummery.—There are various other pretentions to charms, when the whole of the proceſs is conducted by nature, for all pretenſions, where there are no immediate applications made either to the wound, or at leaſt to the general conſtitution of the patient, there can be no rational probability of any advantage being derived from them: but as a healthy ſtate of body is very neceſſary in expediting the cure of wounds, the firſt paſſage muſt be kept in good order.

We are firmly perſuaded, from perſonal experience, that the proper uſe of oils, and balſams, will again come into repute, both in wounds, and ulcers: for although wounds, when their cures proceed without any obſtructions, in healthy conſtitutions, require nothing more than keeping them clean, and excluding the air, by the mildeſt, or leaſt ſtimulant ointments, ſuch as cerate, ſpermaceti ointment, &c. or the yellow baſilicon, where one more ſtimulant is wanted; yet in caſes of wounds attended with great pain, olive oil, or balſam capivi, or ſuch other oils, or balſams, as may be moſt convenient, are of eminent ſervice. The myrtle wax, of which candles are made in Carolina, being of a firm conſiſtence, deſerves attention in the formation of ointments; with olive oil, an ointment may be formed of any conſiſtence to ſuit the weather.

In ſmall wounds, or ſores, eſpecially on the legs which are often bruiſed, we never found any application anſwer better than a very thin membrane, (as it makes no mark under the ſtockings, it cannot be perceived.) ſuch as a bladder of any animal, when dried, may be divided into, by ſeparating the different layers (lammellæ) into which they may be divided, the thinner they are the better; they are to be moiſtened in order to ſoften them, and applied to the wound; by this means the air is effectually excluded; theſe I firſt learned the uſe of on ſhip board, when in want of ointment, but have often uſed them ſince through choice, eſpecially on the ſhin bones.

Inflammations, Phlegmonous, and Eryſipelatous.

INFLAMMATION appears to be cauſed by irritation, in moſt inſtances, where we can trace it to its cauſe, although it depends very much on the ſtate of the body, or the nature of the part irritated, whether the affection will be a true phlegmonous inflammation, an eryſipelatous, or ſpaſmodiac affection, or even tettanus, or whether there ariſes other ſymptoms, as a ſymptomatic fever.

An inflammation is known to be preſent, by a heat, pulſation, and pain, redneſs, and commonly a ſwelling of the parts affected, although there are ſome varieties, &c. but as there are ſome ſwellings without inflammation, ſo are there ſometimes inflammations without ſwelling. But as inflammations are the moſt common affections which occur in the human body; there are two principal varieties, or rather ſpecies of them, as they require very different modes of treatment; theſe are the phlogiſtic, and the eryſipelatous, or erythematic; the firſt is the true and genuine inflammation, which takes place in young, ſtrong plethoric perſons, of tenſe fibres and great inherent ſtrength, &c. It is generally accompanied with an increaſe of heat, redneſs and pain, and it is generally attended with an increaſe of the ſtrength and vigour in the veſſels of the part. But the erythematic is principally found in weak, irritable, and delicate habits, whoſe energy is much exhauſted by age, expoſure to a warm atmoſphere, or an over free uſe of ſpiritous liquours, or any long continued irritations: what is underſtood by an inflammatory, in oppoſition to a nervous habit, are the reſpective ſubjects of theſe varieties of the diſeaſe. Irritations, ſuch as a bruiſe, wound or fracture, may cauſe either, juſt as the habit of body may happen to be prediſpoſed, but an erythema, or eryſipelas has been thought peculiar to the membranous, and phlogoſis, to the muſcular parts; this is often the caſe: but in phlegmons the pulſe is full, hard and frequent, but in erythema it is apt to be ſmall, quick, and unequal, or fluttering, with much nervous mobility, &c.

A capacity of diſtinguiſhing between eryſipelatous, and phlogiſtic inflammation is of much importance in the practice of medicine, for as the internal parts are alſo ſubject to each of theſe ſpecies, as well as the external, conſequently thoſe who are uſed to pay attention to the ſtate of the pulſe, and other phenomena, in theſe different affections when externally ſituated, will be the moſt capable alſo of determining, by their judgment from the external appearances, when they are ſeated in the internal parts of the body; this alſo points out to us, in an eminent manner, the advantages which are derived from the practice of ſurgery, being united in the ſame perſon to that of medicine; for it habituates us to the conſideration of the different ſtates of the body; and by this means we learn better than by any other, to pay attention to the varieties of habits, conſtitutions, &c. whereby we learn to leave the common ſchoolboy routine, of thoſe who practice merely by the names of diſeaſes, at a proper diſtance to follow their ſervile modes, which as they only imitate others, muſt often be but indifferently applied, with their formulas, of medicines. Attention of this nature will, with a competent knowledge of phyſiology, learn us to think, and to act with deciſion, and reaſon in a bold, but rational manner, and prevent a number of thoſe miſtakes, which routine practitioners, and ſervile imitators fall into, &c.

Phlogiſtic, or true inflammation, is often an original diſeaſe, which never remains long ſtationary; but eryſipelatous inflammations are commonly ſymptomatic of ſome hurt, produced in ſympathizing parts, by irritation; what is named a ſymptomatic fever, is derived from local inflammation, cauſed by a wound, bruiſe, &c. As the diſtinction between theſe ſpecies of diſeaſe is one of the greateſt importance, and on ſome occaſions, one of the moſt difficult leſſons in the healing art, we would wiſh that the ſtricteſt attention, therefore, ſhould be paid to it. In eryſipelas, there is no circumſcribed tumour, the ſkin appears of a bright red colour, which diſappears on preſſure, but ſoon returns; and the pain which attends it, is very different from that of a phlegmon: there is little or no tenſion on preſſure, it rather reſembles the feel of a mere affection of the ſkin; we may alſo remark, that in real phlogiſtic inflammation, ſuch as occurs in the robuſt, the pulſe ſeldom exceeds 100 ſtrokes in a minute, and it is at the ſame time ſtrong and tenſe, ſo that thoſe who have been uſed to diſtinguiſh them, can do it readily; but in the eryſipelatous, it often goes to 120, and is leſs tenſe, or tremulous, this is more common to thoſe of lax fibres, the weakly and indolent: any irritation may cauſe this ſtate in prediſpoſed habits, &c. it is accompanied with a ſenſation of heat, and prickling pain, they ſeem to be in reality two diſtinct ſpecies of diſeaſe, both in their natures and treatments, and in their manners of termination, eryſipelas never forming matter, nor does it, and phlegmon ever alternate, or change into each other.

A capacity of diſtinguiſhing theſe different ſpecies of affections, ſo ſimilar to each other, will be better comprehended, if we will turn our attention to the conſequences of internal, as well as external inflammation, for eryſipelas, as well as phlegmon, invades the internal, as well as the external parts, and in this caſe it is evident that we muſt be altogether directed by the ſymptoms, and the preſent ſtate, habit and appearances of the patient, for in caſe that he is of weak, and very irritable habit, we may be ready to expect that the diſeaſe is of the eriſipelatoſe nature. But if the patient is poſſeſſed of great inherent ſtrength, rigid ſolids, in the prime of life, &c. we have the more reaſon to expect phlegmonous inflammation; and it appears that the ſame cauſes may give origin to either of them, ſuch as punctures, wounds, bruiſes, fractures, &c. or in ſhort, any cauſes of violent irritation, as expoſure to a hot ſun, and ſome chymical, or mechanical ſtimuli; ſo that in forming a juſt concluſion it is to the habit of body, and not to the cauſe of the irritation, that we are to attend for juſt information in affections of this nature, as well as that of many others.

As to the cauſes of inflammation, we believe they are all cauſed by irritations, and irritations have been divided into mechanical, and chymical, but if we adopt diviſions, we muſt admit of a third, which cannot with any propriety be reduced under either of theſe, as the animal and vegetable, and poiſons or medicines, which although they act powerfully on the irritable, and ſenſible principles of man, and other animals, are independent of any chimical properties hitherto diſcovered, for we could not foretel by any chymical analyſis, à priori, how they would act. But as the method of cure is the great object; this in phlogiſtic inflammations is very ſimple, every means muſt be uſed to leſſen the morbid irritation; and in the firſt place as the blood veſſels are commonly full, and their actions increaſed, it is generally neceſſary to take blood, and to repeat it once or twice occaſionally, according to the urgency of the ſymptoms; and at the ſame time, the contents of the firſt paſſages are to be evacuated, by gentle laxatives, ſuch as Glaubers, or Rochell ſalts, or any other neutral ſalts, or caſtor oil, and in ſome caſes where a foulneſs of the ſtomach is preſent, emetics or nauſeating doſes of antimonials are very uſeful in the beginning.

Irritation, we may conſider as the cauſe of inflammation in energetic habits; but the nature of the inflammation varies with the conſtitution of the patient, and the part of the body affected; in weakly nervous perſons it will partake of the erythematic, or eryſipelatous, diſpoſition: and in others it will be of a rheumatic nature.—— A. G. Richter endeavoured to drive all diſeaſes from irritation, even the jaundice and dropſy; conſequently they muſt be owing to irritability. Many diſeaſes we believe are cauſed in this manner; but we would rather ſuppoſe that all others were cauſed by it, than the dropſy, or palſy. Fevers and nervous affections, obviouſly originate from irritation: and ſympathies, which are only ſecondary irritations, are propagated in ſome manner not yet well aſcertained, from the ſame ſource.

Inflammation alſo takes place from other cauſes, as in ſome caſes, from exceſſive cold, which approaches near to that cauſing mortification. Here, after the numbneſs is overcome, there is commonly a pain, and pruriency of the part, and generally a ſlight inflammation, which as ſoon as it opens, by the ſkin being corroded, or mortified over the part, has got the name of kibes, a diſeaſe not uncommon in grown perſons, in cold weather, but more common to boys, on the extremities, as the heels, the fingers, and toes, &c. Covering the parts with a piece of flannel, moiſtened with oil of turpentine, anſwers well, before they break; but when open a piece of a bladder moiſtened with the oil, and the ſore waſhed with it, anſwers well here.

But in the erythematic and eryſipelatous ſtate of inflammation, there is a weakneſs, or over great mobility of the parts affected; this is the ſituation in which ſtrengtheners are proper, and cordial nouriſhment with opiates, and in ſome inſtances calomel, as a ſtimulant, has been uſeful; for theſe medicines by giving a firmneſs to the moving parts, diminiſh the erythematic ſtate; and here the ſucceſs of cordial and ſtrengtheners, has given origin to the prepoſterous practice, of uſing calomel and bark, wine and opium, in real phlogiſtic inflammation, both when placed externally, and when ſeated in the viſcera. For ſuperficial obſervers, and routine practitioners, commonly miſtaking the one, for the other alternately, apply indiſcriminately, the proper treatment which would ſucceed in the one, to the other; of this miſtake we have repeatedly witneſſed the fatal effects, the inſtances of which are by no means rare; and ſuch practitioners are conſequently, both themſelves and their patients egregiouſly deceived: otherwiſe, how could we expect that any perſon, bearing the name of a rational practitioner, if he is really in a ſtate to uſe his ſenſes, and his reaſon, ſhould expect to cure an erythematic inflammation, in a perſon of ſeventy or eighty years of age, by blood-letting, and a debilitating regimen; but the abſurdity of this mode, can be only equalled by the treatment of ſuch practitioners in the phlogiſtic ſtate, in the young, ſtrong, and plethoric, uſing ſtimulants and ſtrengtheners, and not taking blood, &c.

As for external applications to the parts, fomentations, with clothes rung out of warm decoctions, of any emolient herbs, or warm water, are very uſeful, and the ſteam both; or even the application of warm bathing, which however ſhould never exceed blood heat, or 96°, and poultices, are very neceſſary; theſe may be made of oatmeal, linſeed, or corn-meal, or pounded biſcuit well boiled in water, with the addition of a little oil, or lard, in order to preſerve the ſoftneſs, applied to the part moderately warm, and renewed once, or twice in twenty-four hours, uſing the fomentations at each application, with an eaſy poſture; thin diluent drinks, and a mild food, moſtly of vegetables, avoiding all ſpirituous drink, or ſtimulant food, as ſalt meat, or ſpices.

Nitre given in as large doſes, as the ſtomach will bear it, ſo as to leſſen the vaſcular action, is often uſeful in active inflammations, and antimonials every night at going to reſt, promotes a perſpiration, leſſens the action, and has a tendency to keep the bowels open, which ſhould, all through the cure, be attended to. But as it is in many caſes, neceſſary to be more guarded, againſt encouraging the formation of matter, and where there is a probability of repelling the inflammation at once, eſpecially when a glandular part is the ſeat of the diſeaſe: inſtead of ſoftening poultices, repellents muſt be uſed, ſuch as vinegar, lead water, &c. and cold applications to the affected parts: for this purpoſe, bitter and aſtringent applications are often uſed in fomentations, ſuch as camomile flowers, and bay leaves, with the addition of a little vinegar, or a decoction of oak bark, in which a piece of allum is diſſolved in it: but if inflammations of this nature, cannot be repelled in the courſe of a few days, they ſhould be treated with emolient fomentations, and poultices, ſuch as before mentioned, rather than harraſs the patient with unneceſſary applications, and a continuance of the pain, in caſes of old and obſtinate ſores, particularly on the legs, we have repeatedly found eminent advantage, from the application of emollient poultices, and fomentations, after they had for years reſiſted the powers of both external, and internal applications.

It often happens in inflammations of the eyes, that cooling ſedatives and repellents, without the evacuations, ſuch as a rag wet with lead water, a weak ſolution of white vitriol, or ſugar of lead, may be uſed; and inflammations in the glands ſhould always be repelled, they are ſo very obſtinate, and difficult to heal; unleſs we except thoſe which are the conſequence of the criſis of fevers; for they often carry off the fever by ſympathy, not alone by the evacuation of the matter formed.

The eryſipelas requires a very different treatment from phlegmon; here evacuations are of much leſs efficacy, and often hurtful, eſpecially when ſo perſiſted in, as to cauſe weakneſs, or to increaſe the erythema (or irritable diſpoſition) ſuch as blood-letting; but gentle laxatives may be uſed, and every other means which leſſens irritation; and at the ſame time, the vital energy muſt be ſupported, in a due tone; on this account, ſtrengtheners, cordials, and the like, are often proper, as wine, and even opium; but particularly, whatever promotes the permanent energy of the conſtitution; and either removes the irritation, or ſtrengthens the conſtitution againſt its effects, ſuch as gentle ſedatives, and the bark, after the cauſes of irritation are removed.

Antimonials are peculiarly uſeful in this affection, in ſuch quantities as to keep up a perſpiration; for at the ſame time that it relaxes, and empties the veſſels on the ſurface of the body, it promotes a laxity of the inteſtines; the London antimonial powder, anſwers here very well, or antimonial wine; they may be given in (ammon. acet.) vinegar, ſaturated with the ſalt, or ſpirit of hartſhorn, together with the application of ſtrong ſpirits, to the part, if the eryſipelas is only ſlight, or ointment of elder, which is an old application to thoſe affections: or the ſpermaceti ointment; or even oil formerly ſo univerſally condemned in this diſeaſe, may be applied on ſoft linen, to the part, as it is a powerful means of allaying irritation, when it is great: but when the inflammatory ſtage is over, oil will not anſwer; for then ſtimulants, &c. are requiſite, in order to prevent a mortification of the parts. It is in this ſtage that oils, and fats are peculiarly hurtful; for like other cauſes of irritation, it muſt ceaſe through time, and leave the parts in a ſtate of weakneſs.

Inflammations being of ſuch an extenſive nature in the practice of medicine: whether ſeated externally, or internally, that we cannot underſtand, even the ſimpleſt diſeaſes, without an accurate acquaintance with them, in all their different ſtates and varieties.

Burns and Scalds.

WHERE the ſkin is not removed, may, in the firſt place, be plunged into cold water, as it is often the moſt convenient application at that inſtant; but as ſoon as lead water can be procured, or when it is not at hand, vinegar and water, ſhould be applied on linen rags, folded up, and kept wet with it continually, in order to prevent bliſtering as far as poſſible; or ſometimes ſtrong ſpirits, as brandy, rum, &c. anſwers very well. This courſe may be continued for two or three days, ſometimes changing theſe applications alternately; obſerving if bliſters ſhould ariſe, not to open them: for by this means we avoid much unneceſſary pain, but let them alone until they either break ſpontaneouſly, which they commonly do, if large; or when ſmall, they will diſappear, their fluid being abſorbed by the proper veſſels, &c. and in both large and ſmall bliſters, a new ſcarfſkin forms underneath, in a few days, which defends the nerves of the ſkin from the irritation of the air, or other ſtimuli.

But in large and deep burns, or even in ſuperficial ones, where the bliſters riſe, and break ſuddenly, the irritation and pain is generally very great; in this ſituation we have experienced the ſalutary effects of oil, (olive) applied to the ſurface on very ſoft linen rags, doubled and dipped in the oil, and applied to the parts. And the more deep burns, when the eſchar is caſt off, may be covered with dry lint, and the oil dropped on it, ſo as to moiſten it; and then it may be covered with ſpermaceti ointment, or cerate, ſpread on linen, or tow, &c. and in caſe of great pain, it may be neceſſary to uſe laudanum at night.

Dislocations and Fractures of the Bones.

DISLOCATIONS and fractures of the bones frequently occur when medical aid may be far diſtant, and it is often impracticable to be found in a convenient time;—therefore in ſome country ſituations, fractures are treated by mechanics, who commonly pretend that they are in poſſeſſion of ſome ſpecific applications for their cures, and attain the names of bone ſetters; when the whole of their knowledge commonly conſiſts in a rude manner of extention, and endeavouring to retain them in their proper directions, in their own methods, but ſeldom in the beſt manner. Overſtretching, or bending a joint rudely, either tears, or diſtorts the ligaments, and membranes, and commonly cauſes acute pain; in this caſe the immediate application of anodyne liniment, or if it is not at hand, equal parts of laudanum, and water will give almoſt immediate relief, applied on a linen rag; vinegar, or lead water, are alſo uſeful applications at firſt, either by themſelves, or mixed with laudanum, in order to prevent inflammation; but after ſome time, when the inflammation is gone, then ſoap liniment anſwers better; it ſhould be well rubbed on the part. Frictions with penetrating oils have alſo been uſeful, ſuch as gooſe-greaſe, and bears oil, &c. are famous among the country people in theſe caſes.

Diſlocations, or bones getting out of joint, are remedied by a cautious extention, and afterwards retaining them in their ſituations by bandages, and by ſolded pieces of old linen, called compreſſes, moiſtened with vinegar, or lead water, in order to obviate inflammation.

The application of bandages can ſcarcely be deſcribed, unleſs by figures, or upon the human ſubject, or machines; but as moſt men have ſeen them, in one caſe, or other, and their applications being eaſy learned, we ſhall ſay but little concerning them, only that they muſt neither be over tight, nor over looſe; as in the one caſe they would compreſs over much; and in the other, they would be of no uſe to the parts.

In the replacing of diſlocated limbs, the principal object to be attended to, is the mode in which the extention is made; for the ſucceſs of the operation depends more on this, than the force with which it may be applied. Therefore, gradually extending from one ſide, to the other, and gently moving it, upwards and downwards, is more likely to ſucceed, than ſtrong extention in a right line; the force ſhould be begun very gradually, and increaſed ſlowly at each trial, in caſe it reſiſts the firſt. In caſe of a luxation being obſtinate to reduce, bleeding, from a large orifice, ſo as to cauſe faintneſs, may often be uſed advantageouſly; and whilſt the patient is in a weak ſtate, there is a greater probability of ſucceſs, from extention well directed; the operator at the ſame time, endeavouring with his hands, to replace the diſlocated end of the bone.

In ſtrong young men, diſlocations are apt to be moſt difficult of reduction, and in them bleeding is moſt neceſſary: but in women, or children, or men of weakly conſtitutions, they are commonly eaſily reduced.

Where inflammation has taken place, before the reduction is accompliſhed, it cannot be performed until that is overcome; for this purpoſe, cooling laxatives, ſuch as ſalts, are neceſſary, together with blood letting, and keeping the patient warm, uſing warm drinks at the ſame time, and antimonial wine, about twenty drops at each doſe, in order to promote a perſpiration; or a ſolution of tartar emetic, from a half, to a whole grain—this is very neceſſary in all inflammations; a ſcruple or two of nitre is alſo uſeful in theſe caſes.

Fractures, or broken bones, are in general eaſily diſcovered, by the protuberance of the parts over the injury; and commonly a crookedneſs of the limb, eſpecially if it is in the upper bone of the arm, or in the thigh bone. The patient can alſo feel a grating, when the limb, or part affected is moved; the ſame ſenſation can alſo be eaſily perceived by others, when they endeavour to extend, or place the parts in their natural poſition.

Fractures are uſually attended with conſiderable pain, and inflammation, cauſed by the rough ends of the bone, rubbing againſt the ſurrounding parts. In order to obviate this, vinegar, or lead water, are commonly uſed; linen clothes, moiſtened with theſe, are generally laid on over the ſeat of the injury, and kept conſtantly wet, for the firſt three or four days. In young, and ſtrong perſons, bleeding may be neceſſary, and cooling ſedatives; ſuch as common ſalts, may be taken inwardly; and the part muſt be kept in the eaſieſt poſture, in which it can be placed and retained ſtraight. We have not yet mentioned extention, and ſetting the broken bone in its natural poſition, although this is the firſt thing which ſhould be done, if poſſible, before the inflammation riſes high; or otherwiſe it cannot be done until this abates.

A tolerable accurate knowledge of the bones, and muſcles, and of their modes of acting, is very neceſſary here; the muſcles of the part ſhould be put in the moſt relaxed poſition, and the extention ſhould be made only on the broken bone; ſo that if the upper bone of the arm is broken, the extention muſt be made between the elbow joint, and that of the ſhoulder; the lower part of the arm being bent at the ſame time: and a ſimilar mode muſt be uſed in any other bone of the limbs; the extention muſt be confined between the ends of the broken bone, that it may prove effectual, and the other parts of the limb may be placed in a relaxed poſture.

The application of ſplints, we believe might be very ſafely deferred, until the inflammation is over: for even when they are applied before it has ariſen to any conſiderable height, we have generally found it beſt to remove them, when the inflammation has taken place, if it is conſiderable; for then the parts are ſufficiently ſtiff without them: and they contribute to keep up an irritation by their hardneſs, and preſſure.

As a very convenient application, in the place of ſplints, and ſuch rigidly inflexible, and uneaſy applications, we ſhall mention what we have ſometimes found a very uſeful ſubſtitute, either to form caſes for a fractured limbs, or to anſwer the purpoſe of ſplints. The untanned hides which are commonly carried on board of ſhips, when wet are extremely pliable, and into whatever form they are put then, they retain it when dry. A convenient ſhape may be given to a piece of this ſubſtance, and applied to a fractured limb; and when it gets dry in that poſition, it will retain exactly the ſame form which was given it when moiſt; for as the wet ſubſtance cannot hurt the limb, as we generally keep them wet conſtantly at firſt, with vinegar, or lead water, on purpoſe to repreſs inflammation. The uſe of paſte-board in theſe caſes, is an old practice, and probably was a reaſon for our having recourſe to this ſpecies of application, when there were none of that at hand; but now we are convinced that it often anſwers better than any other application, eſpecially when it is wiſhed that the application ſhould accommodate itſelf to any unevenneſs in the ſurface; which a piece of a raw hide does in the moſt effectual manner; and becomes ſufficiently ſtiff, when dry.

Diseases of the Skin.

DISEASES of the ſkin are as various as thoſe of other parts of the body. Thoſe which it has in common with other parts, ſuch as inflammations, we ſhall not take notice of here; but of ſuch as are peculiar to it alone. A troubleſome little affection, called prickly heat, is very common to all northern conſtitutions when they go to warm countries. Of this we have experienced two varieties: the firſt appears to be the immediate effect of heat, and appears in the form of pimples, all over the body, cauſing an itching, and pruriency, but particularly in the limbs; we have found common ſalts, taken once a week, one of the beſt remedies to allay this ſenſation, and the external application of diluted acid of vitriol, frequently rubbed on the parts.

The ſecond variety of the diſeaſe is more frequent with thoſe who have been ſomewhat exhauſted with warm climates, and brought low by intermittents or other diſeaſes, and poſſeſſing acute ſenſibility, particularly of the ſkin, in which the perſpiration has been very profuſe. In ſuch the ſcarfskin appears to be almoſt obliterated, and ſo thin, as not to defend the nerves of the ſkin from external impreſſions. In this affection frequently changing the linen is neceſſary, and duſting the ſkin with hair powder, or any other dry powder; with doſes of ſalts at convenient intervals, and abſtinence from ſpirituous liquors.

Diſeaſes of the ſkin which go under the names of herpes, tetters, ringworms, &c. appear to be very ſimilar in their natures, and the ſame treatment is equally applicable to them all. The ſcarfskin is the part principally affected; but the true ſkin and mucous netlike ſubſtance, are alſo in a ſtate of irritation, whereby the ſecretion is increaſed, and a prickling ſenſation, is produced with a ſcaling appearance of the ſcarfskin.

Theſe affections are probably a milder variety of the leproſy of the eaſt; when on the weſt coaſt of Sumatra, we often obſerved affections, apparently of the ſame genus, amongſt the Malays, but of a far more inveterate nature; for in many of them it formed large warty like protuberances; between which there were commonly large fiſſures, which penetrated through the ſkin; theſe appearances were more common there, than we remember to have ſeen them in any other places. This diſeaſe may be attributed to their modes of living, as they are a people but little advanced in civilization: and are not the moſt cleanly in their dreſs, or modes of life. Salt pork, ham, or fiſh appears to prediſpoſe to this affection, for we have ſeen it very prevalent among thoſe, who live much on ſuch food; and this is ſuppoſed to be one reaſon why ſwines fleſh was forbidden to the Jews; for among them this would appear to have been a formidable diſeaſe. It is alſo not uncommon amongſt thoſe who go to the Eaſt-Indies from northern countries, more eſpecially amongſt the young; but whether they acquire it by contact with the natives, or by the modes of living on board of ſhips, we are not certain. However in thoſe whom we have had under our care, it was ſeldom very difficult to cure, when treated in a proper manner; and eſpecially in thoſe who pay proper attention to cleanlineſs, which thoſe we were among commonly did.

In the treatment of theſe appearances, ſome purgatives ſhould begin the cure; a doſe or two of jalop, and calomel, or ſome other ſuch ſtimulant, may be given; and afterwards common ſalts, once a week; and for external application, we have found nothing anſwers better than a mercurial lotion, or where it fails, as it ſometimes does, lunar cauſtic rubbed on the parts, and on the ſound ſkin, over which they are making their way, near to them, by thus deſtroying the poiſon, or the diſpoſition to it; but that over which they have paſſed, need not be touched, as it has loſt all ſuſceptibility, of being affected; this method when duly perſiſted in, ſeldom fails. But where a large ſurface is diſeaſed, a lotion generally anſwers beſt.—In ſome caſes, there are large, reddiſh, and ſcaly ſpots, appear on the ſkin; they are commonly itchy, and often ſaid to be derived from a ſurfeit; for theſe a fluid commonly anſwers beſt; corroſive ſublimate, one grain or two to the ounce of water, with as much ſal ammoniac, anſwers well for theſe; with which the parts may be rubbed over in the mornings, as the ſkin is then commonly the moſt ſoft; the application, conſequently then produces the beſt effect.

In thoſe who live much on ſalt meat, as it is common, both in the country, and on board of veſſels; eſpecially in young people, who are at the ſame time negligent of cleanlineſs; large blotches on the ſkin are very common, as well as the preceding affections; they appear with eruptions, which ſcab over; thoſe perſons of groſs, and torpid temperament, are moſt ſubject to theſe affection. But with reſpect to the moſt eligible plan of cure, a doſe of one ſcruple of jalop, with two grains of calomel at the beginning, commonly anſwers very well, once or twice a week. Alſo, rubbing a little ſtrong mercurial ointment every morning on the parts commonly removes them. Abſtinence from ſalt meat if practicable, and alſo from ſpirituous liquors is neceſſary, and after two or three repetitions of the purgative, it may be changed for ſalts, which commonly completes the cure; for all theſe appearances on the ſkin, we would adviſe a regular uſe of warm drink; decoction of the woods have been famed here. Alſo tea uſed regularly, or any herb teas, which ever the patient may be fondeſt of, ſweetened with ſugar; which, together with the warm water, we believe to be the moſt neceſſary part of the regimen, ſo that any herb or wood, which has an agreeable flavour, as ſaſſafras, may be uſeful. Guiacum has virtues peculiar to itſelf, in theſe and other affections.

Common boils, are frequent in ſome young perſons, of groſs conſtitutions; they are rather diſeaſes of the membranes under the ſkin, in their origin, although the ſkin itſelf is generally affected in their progreſs. They are very nearly allied to blotches, as the ſmaller inflammations of this nature are named: and require a treatment, in many reſpect ſimilar; only that boils, when ſuppuration is advancing requires poulticeing, in order to eaſe the pain, and to promote the ſuppuration; poultices of oatmeal, or of Indian meal, well boiled in water, and applied with a little oil, or lard, anſwers very well. By this means they ſuppurate without cauſing much pain; and when matter is formed, it will either make its way through the ſkin, or it may be let out with a lancet: and then dreſſed as an ulcer. In order to eradicate them from the conſtitution, in thoſe who are often troubled with them; two or three calomel purgatives may be neceſſary—one or two grains of calomel, with a ſcruple of rhubarb or jalop, generally anſwers for this purpoſe: and afterwards, one, or two doſes of ſalts, in order to allay any irritation which may remain, in conſequence of thoſe draſtic purgatives, and to ſoothe the irritable habits of thoſe, who are affected in this manner.

The itch alſo is one of the moſt diſagreeable diſeaſes of the ſkin, it is moſt common among thoſe who are negligent in cleanlineſs. It is in general ſo well known as not to require a deſcription; ſome northern parts of the world have become famous for it. It is moſt common in cold weather, eſpecially among thoſe who live in damp habitations, ſuch as the ground floors of houſes, or in cellars, eſpecially if they are inattentive to cleanlineſs, and live much on groſs food: ſuch as ſalt pork, ham, or ſmoke-dried fiſh. Some purgatives of ſalts may be of uſe here, in order to ſet the habit of body in order; and repeated once, or twice a week, during the cure. For external application, ſulphur may be rubbed on the parts, the dry flour of ſulphur anſwers as well as the ointment, without the inconvenience of the ſmell, which require perfumes to make it tolerable; as mixtures of it with lard do.—The acid, or oil of vitriol, diluted with water ſufficiently, for the ſkin to bear it without pain, is an old practice in the Britiſh navy, it is both a cleanly, and efficacious application for this affection.—The itch is known by its affecting the hams, and between the fingers, and the wriſts, with ſmall itchy pimples, and cauſing a ſcurf on the ſkin.

In ſome caſes cutaneous affections are ſo obſtinate as to reſiſt the ſtrongeſt ſolutions of corroſive ſublimate; when this is the caſe, lunar cauſtic commonly ſucceeds; this laſt is ſo powerful in theſe caſes, when uſed every two or three days, and perſiſted in for ſome time, that we can ſcarcely recollect an inſtance of its failing. In ſome caſes, defending the parts from the air, may be neceſſary, eſpecially where they penetrate deep, and have corroded the ſkin; as a defence for theſe diachylon with gum, ſpread on linen, anſwers better than almoſt any other plaiſter, as it is of a very adheſive nature, and is ſo mild as not to cauſe any great irritation.

Where there are much irritation of the ſkin, after mercurial laxatives, and the eruptions appear to be rather made worſe by them; or do not diſappear by their uſe, after two or three doſes at three or four days interval; then ſalts ſhould be uſed—for the irritation cauſed by the mercurials are commonly beſt allayed in this manner, by the ſedative properties of the (neutral) ſalts.

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General Observations.

IT has been much diſputed, whether the practice of medicine, is carried on to more advantage, and improvement to the profeſſion, by being divided into ſurgery, phyſic, and pharmacy, as it is at preſent in ſome parts of Europe; or whether it would not be more for the intereſt of the public in general, as well as for the faculty, if all the branches were united in the ſame perſon. It is advanced againſt this laſt mode, that the ſcience of medicine is too extenſive, for human life; and the common limits of the mind, are too contracted to allow the generality of men ſufficient time and opportunities, of arriving at any tolerable degree of perfection, in all the different branches. This however, is only partially true; and where it might appear to be moſt ſo, it is little more than ſpecious deception; for although the ſtudies are many, laborious, and extenſive, yet every one of the ſciences which have any tendency to explain the animal œconomy, either in a ſtate of health, or diſeaſe; or the preparation, choice, and operations of medicines upon it: that the man who is not capable both of acquiring, and comprehending all theſe neceſſary qualifications, muſt neceſſarily appear to any perſon of common capacity, a very improper agent to adminiſter relief, in any dangerous caſe. Beſides theſe different ſciences are ſo connected together, that there is no ſuch thing as to be a complete maſter of one of them, and to be ignorant of others; for there are no ſuch thing as learning the practice of the healing art, by halves. One muſt either underſtand all, or be incompetent in all: therefore, with a few exceptions, from local circumſtances, a general practice, as well as a general knowledge of the animal œconomy, and of diſeaſes, will be moſt for the honour of the profeſſion, and for the advantage of mankind in general. Some men neverthelefs, from particular circumſtances, as from having more practice in ſurgery, or from having been more expert practical anatomiſts, may excel as ſurgical operators; but this ſhould not exclude them from a general ſtudy, as well as a general practice; and the more eminent they are in all the departments of the healing art, the better we may expect they will be in their own favourite branch: as one part of the animal œconomy, either in health, or diſeaſe, does always elucidate another. A knowledge of anatomy, and the mode of performing operations, is ſure enough all that an operator might require; but there are few ſurgeons who confine themſelves merely to operations. Either London, or Paris, would ſupport but a ſmall number of this deſcription. Therefore as they practice medicine, they ſhould certainly ſtudy it, and learn the practice under the maſters of the profeſſion: or at leaſt the animal œconomy, and the operation of medicines on it.

With reſpect to the preparation of chymical medicines, they may undoubtedly be done to moſt advantage in the large way; and that they may be prepared with the more œconomy, they require much attention: but one perſon, who is well verſed in this buſineſs, may ſave ſeveral hundreds the trouble, by ſupplying them with the more complex preparations; but every practitioner ſhould underſtand the principles of theſe preparations, and be qualified in caſe of neceſſity, to ſupply himſelf; for every one ſhould know their component parts, and be able, either to compound, or decompoſe them. Therefore, they ſhould be well acquainted with chymiſtry and pharmacy, before they are fit to make the beſt uſe of the medicines, or indeed before they ſhould be allowed to make any uſe at all of them; for without this knowledge they are liable, every time they preſcribe, to commit ſome capital miſtake; either by converting mild medicines into corroſive poiſons, or rendering them quite uſeleſs. And although they may avoid theſe errors, by following a routine, which ſome perſons of the neceſſary information have laid down to their hands; yet in either caſe, they are but little better than machines, without the qualification before mentioned.

The apothecaries company in London, have been of much advantage to the country, by ſupplying it with genuine medicines, in compariſon of the ſituation, in which France, and other countries were in, where medicines were prepared and ſold by unprincipled perſons, at fairs. Enough of their abuſes are related in the regulations produced by the medical faculty of Paris, in the year 1789.

The preparation of medicines, eſpecially in large towns, may very well afford employment, for thoſe who deal in that way; and if they go through a regular education, and have time and opportunity from their other avocations, there is no good reaſon why they ſhould not alſo practice.

But the greateſt acquaintance with the collection, choice, and preparation of medicines, never will learn any perſon their effects on the human body. This is a diſtinct and ſeparate ſubject; therefore we might with as much juſtice ſuppoſe ſurgeon's-inſtrument makers, qualified to perform ſurgical operations, as to ſuppoſe that every one who deals in medicines, knows their effects on the human body. But if any perſon did not foreſee the impropriety of this, experience would ſoon teach them; but the operations of the internal inſtruments of medicine, are not ſo obvious to the ſenſes; therefore, though their preparers may be quite as ignorant of their operation, they are not ſo liable to be detected, and therefore are often able to paſs for what they have no claim to. But as to the other branches of the healing art, we can confidently maintain, that they ſhould not have any artificial barriers between them; for if there are, they are ſources of many inconveniencies, and of ſcarce any advantage, either to the profeſſion or the public; unleſs to ſuit the indolent, who will not exert themſelves, to acquire the requiſite information, for the practice of the art they profeſs.

It may ſuit the taſte of ſome very delicate gentlemen, who are afraid of uſing inſtruments, becauſe in reality, they might at once make a fatal diſplay of their ignorance of anatomy, by wounding ſome important part, of whoſe ſituation they were not ſufficiently aware. It may be ſuppoſed by ſome perſons, that by practicing phyſic only, they may pay the more attention to the ſymptoms of internal diſeaſes, and their cures. But it would be very eaſy to prove this mode of reaſoning to be very ſuperficial, and that unleſs they are firſt made well acquainted with the external, and viſible diſeaſes, and the methods of treating them to the greateſt advantage; they have but a ſmall chance of making any tolerable progreſs in the knowledge, or treatment of thoſe which are internal, and concealed. Upon this ſubject we would recommend a careful peruſal of Kirkland's Medical Surgery; in the introduction, as well as all through the work, there is much original and uſeful information to be found, on this intereſting ſubject.

The theory of ſurgery is generally allowed to be a neceſſary part of a medical education. But theory in ſuch an intricate art, without practice, or experience, is little better than a uſeleſs load on the memory, and can ſcarce ever anſwer any uſeful purpoſe; but often does much hurt, by making the poſſeſſors of it preſuming, and ſelf-ſuffici-ent. In like manner, the theory of pharmacy, without the practice, is difficult to acquire, and almoſt uſeleſs when acquired.

Therefore, we believe the beſt mode of education, is firſt to enter upon the ſtudy and practice of pharmacy.—The names of a Hunter, and a Fothergill, are greatly in favour of this plan. Next add anatomy, and ſurgery, and as nothing can be in the intellect, which is not received through the ſenſes; the theory and practice, will mutually elucidate each other; and if there are any excuſes for leaving off the practice of ſurgery, they ſhould be only thoſe of old age, an unſteady hand, or loſs of ſight, or from a multiplicity of buſineſs; but to do it for fear of the ſmell of ſores, or the horror of operations, argues too great delicacy for any man, who would live by the practice of medicine: for it would be much more advantageous to paſs ſome time every day in this employment, than poring over books, although they have their advantages.

As it may come in courſe frequently to mention medical ſcience, a conſideration of it may not be improper here, eſpecially as it is ſometimes confounded with ideal hypotheſis; a baſe counterfeit, which is very frequently impoſed on the world, as a ſubſtitute for theory; but as this has been the caſe ever ſince medicine was practiſed as a profeſſion: theory has often been diſgraced by ſophiſtry and ſpeculation.

When we ſee real facts, and their conſequences, happening under the obſervation of our ſenſes, and we think and reaſon concerning the manner in which they are brought about: this is theorizing. But ſcience is the reſult of experience and obſervation, carefully made, and attended to, either by ourſelves, or others, on whoſe candour and abilities we can depend; and the operation of our reaſon on theſe facts, which we either perceive by our own ſenſes, or believe on the report of others; this is drawing concluſions from facts, and reaſoning from theſe without admitting any thing into the fabric, until carefully examined, and approved by the teſt of experience. Hypotheſis on the other hand, may be totally built up without any real obſervations; it is a creature of the mind, or ſpeculation, very ſimilar to Berkley's world of ideas; and it is only to the inhabitants of ſuch a world that it can be of any uſe. People of volatile and flighty diſpoſitions, whoſe judgments are commonly very weak, by a defect in their early educations, of inculcating accuracy of reaſoning, are peculiarly liable to fall into hypothetical, and ſophiſtical ways of reaſoning, through want of ſolidity of thought, to apply their reaſon in a right train. Such people have at all times been very apt to fall into hypotheſis in medicine, and amuſe themſelves, and their diſciples with forming ſtructures in the ærial regions of imagination; which although as illuſive as fairy tales, have ſometimes paſſed for profound erudition, or great thoughts and diſcoveries, among their more ignorant acquaintances; but which in reality, nothing but actual experience can ſhew the vanity of, with any degree of conviction, ſo that between theſe two the difference is full as great, as between the two men. mentioned in ſcripture—the one of whom built his houſe on a rock; whilſt the other was content with a foundation of ſand.

The common performances of this ſpecies, are generally a mixture of theory, and ſpeculation, deduced from a few imperfect obſervations, perverted and turned to anſwer ſome pre-conceived hypotheſis, the deficiencies of which are often filled up with ſuperficial arguments, that they may appear the more plauſible. But although we are perſuaded a genuine theory of diſeaſes would be of great utility, yet the fabrications with which we are often amuſed, tends more to retard than to advance the perfection of the profeſſion, by their authors ſetting them forth as infallible; when at the ſame time they have ſtood on very ſlender foundations.

When chymiſtry, after being long perſecuted by the regular Galeniſt's, and Dogmatiſts, was at length admitted into the Temple of Eſculapius, phyſicians thought they might account for every function of the human body, and all its diſeaſes, chymically; hence, acids, and alcalies, were thought to cauſe many diſeaſes, few indeed, in which they were not thought to have ſome ſhare. And in a ſtill later period, when mathematics, and mechanics, came to be faſhionable, and liberal ſtudies; particularly after Newton's famous demonſtrations—others attempted to account for the moſt intricate diſeaſes, mechanically, and mathematically: but although theſe are very neceſſary, and proper ſtudies, and what no gentleman or phyſician ſhould be without; yet we know that it is poſſible to miſapply them; for although the ſciences are the great aſſiſtants, and ſtrengtheners of our reaſon, yet the properties of animated bodies form a ſcience, very different from all others, and ſhould therefore be ſtudied by itſelf, and upon its own principles, and not on thoſe of chymiſtry, or mechanics: neither of which can explain animal, or even vegetable life.

The actual practice of ſurgery is the only means by which the internal diſeaſes of the body can become the objects of our ſenſes, by having ſeen ſimilar appearances when on the ſurface, and comparing them with the pulſe, the countenance, the tongue, and the eyes: for being uſed to examine theſe appearances, which are within the reach of our ſenſes, we ſhall certainly be much fitter to judge of diſeaſes, when concealed from our ſight. But it has been always allowed, that every phyſician ſhould underſtand the theory of ſurgery; but it would not require much argument to demonſtrate that theory, without practice, in this purſuit, is little more than an uſeleſs load on the memory, and an incitement to pedantry and preſumption, and frequently leads the poſſeſſors of it into the wilds of hypotheſis, and expoſes them to the contempt and ridicule of the more rational, and intelligent part of mankind: for theory without practice, leads to ſpeculation; and often raiſes vain men in their imaginations, far above the clouds, into the regions of wild fancy, and boundleſs conjecture; and by propagating their unfounded ideas, for real facts, have led away the unthinking, by a ſuperficial cover of ſophiſtry. But thoſe who take the liberty of thinking for themſelves, and are qualified for it by obſerving rationally, will not be led away by ſuch ſpecious, and ill-founded doctrines.

Theory in medicine, like theory in any other art or ſcience, ſhould be deduced from experience, or otherwiſe it is mere hypotheſis, and conjecture, which is very often prejudicial, in leading the inexperienced aſtray. But real ſcience muſt be the reſult of experiments, carefully made, and diligently attended to, by perſons capable of judging for themſelves, and of diſtinguiſhing the cauſes of the phenomena, and marking them, as they occur, and ſeparating thoſe which are accidental, from ſuch as are conſtant and invariable. But theories when they are adopted, muſt always be ſubject to correction from facts; and under theſe reſtrictions they ſhould always be inculcated, leſt they lead away the inexperienced, which are very numerous in every community: for mankind are conſtantly led away, and prepoſſeſſed by prejudices imbibed in their youths, which requires greater ſtrength of mind, experience and fortitude to overcome, than moſt men are maſters of; but to thoſe who poſſeſs minds capable of progreſſive improvement, and reaſon for themſelves from real facts; theſe may be ſurmounted. We ſhould not here be underſtood as depreciating all theory, but rather as appreciating its real advantages in medicine; for while we think on facts, we theoriſe, and indeed we cannot well think, or reaſon without it: beſides it is of the greateſt uſe in giving beginners an idea of the outlines of the profeſſion; but cannot with any degree of propriety be uſed as a directory for practice; any farther than repeated experience warrants, and here ſcience takes place. It may be ſaid that theory is drawn from this very ſource; nevertheleſs it never can give laws to nature, and we hope it will not be maintained, that any being, leſs than the Deity, was ever capable of forming a compleat theory of medicine.

The regulations formed for the univerſity of Dublin, in the year 1785, and thoſe of the Royal Medical Society in Paris, in 1789, which may be ſeen in the 17th. volume of Duncan's medical commentaries, are very much to the purpoſe; they prefer public utility to antiquated forms, which are common in moſt ſeminaries. But a very numerous claſs of mankind are unable to diſtinguiſh prejudice, from principle. They cannot take on themſelves the labour of thinking, or reaſoning on any ſubject; but prefer going on in the old routine, in which their fathers, and themſelves have been bred, without adopting, what to them would appear pernicious innovations. In this manner have the polite natives of Hindoſtan, and China, gone on for many ages, without making any diſcoveries of importance, either in the ſciences, or arts; for in thoſe luxurious and warm countries, the minds of the natives recoil at the idea of thinking for themſelves on any ſubject; even the laſh of tyranny cannot rouſe them from this torpor.

The new medical regulations of Paris pay due reſpect to practice, without neglecting the other preliminary, and auxiliary ſciences; but theſe in this plan, are little more than an amuſement: whilſt the practice is the ſerious employment of their times, and upon which their merit muſt reſt. And it would very much contribute to the honour of the profeſſion, if other ſeminaries of medicine, would adopt many of their improvements, both with reſpect to the profeſſorſhips, which are to be filled by men of merit ſolely; which is to be determined by competent judges; who in their examinations are to be on their oaths, to do juſtice to the candidates. By this means, men of the greateſt eminence, are ſure of being choſen to thoſe important offices; and thus the reſpectability, and utility of theſe appointments, and of the profeſſors themſelves are preſerved, and the worthleſs excluded. But when given by patronages, the profeſſorſhip may be degraded, and the profeſſors become contemptible. This muſt appear evident to any diſcerning and candid mind.

Uniting the practice of phyſic and ſurgery, is a very important improvement, as the internal diſeaſes cannot be ſo well known, by any other means, as they are by the conſtant practice of attending to the external diſeaſes, in the practice of ſurgery; for by this means we can with the greateſt certainty determine, by the feel of the pulſe, whether there are any internal inflammation: by the accuracy of touch, which the practice of ſurgery is the only effectual means of communicating, &c. and likewiſe to diſtinguiſh the irritable, low, and erythematic diſpoſition, from the inflammatory. Likewiſe our ſight, ſmell, and other ſenſes, acquire an exquiſite nicety of diſtinction, through uſe, which is never to be obtained otherwiſe, than by actual practice. In theſe regulations the examinations of ſtudents, are ſomething more than a formal parade, by independent practitioners, on actual practice, and are very ſtrict; no dependance is put in diſſertations, &c. being well aware of the means by which they are generally compoſed; but they do not diſcourage them.

It would have been a very happy circumſtance in the practice of medicine, and very conducive to render it more ſcientific in the preſent times, had there been more attention paid to the ſymptoms of diſeaſes, and leſs to their names: for then the phyſical cauſes of the ſymptoms would have been more attended to. Indeed it would even have been better, had names never been applied to diſeaſes, than that the ſymptoms ſhould have been neglected: becauſe it is from conſidering all the phenomena, that we can find the nature of the diſeaſe —and even with all our attention, it is ſometimes a matter of difficulty to find out their natures at firſt. But we muſt have recourſe to the cauſes, whether external or internal, as the preceding weather, the prevalent diſeaſes, infections, the age, ſex, and temperament of the patient. And ſince it muſt be by the ſymptoms, that we are to find out the diſeaſe, when conſidered together, with the other appearances; it is likewiſe by them that we are to be directed in our methods of cure. But it is impoſſible to proceed rationally, unleſs we conſider their cauſe and modes of acting. But it often happens, that a name for the diſeaſe, is the only thing paid any attention to, by a certain claſs of practitioners: and that muſt, without other information, be very often miſapplied; through a neglect of paying proper attention to the cauſes of the ſymptoms; and in theſe circumſtances, this has been a great ſource of an emperical practice: becauſe when any ignorant perſon gets a name for a diſeaſe, and a preſcription, which had before ſucceeded in a diſeaſe to which the ſame name had been applied, either from his own experience, or often from vague report; he will undoubtedly conſider himſelf qualified to act the phyſician, although he may be totally ignorant, both of the animal economy and the operation of that or any other medicine when applied to it. But although no laws can ever hinder any man from diſpoſing of his own life, or health, as he pleaſes; yet for the ſake of humanity, as well as policy, there ſhould be laws to prevent the ignorant from tampering with the lives, and healths of others, and from making a livelihood by ſuch modes of practice. It is to the ſymptoms, habit of body, and other appearances, that attention ſhould be paid, and alſo to the ſtages of the diſeaſes; from theſe alone, the only ſafe indications of cure are to be taken: but the names of diſeaſes, are often merely arbitrary, if defined, and worſe applied. Attention, however, is to be paid to the antecedent, as well as the preſent ſymptoms; or otherwiſe ſhould we viſit a perſon in the hot ſtage of a remittent, or intermittent fever, we might miſtake the diſeaſe for being highly inflammatory, and treat it accordingly.

But whilſt much attention has been paid to the names of diſeaſes, their conſtituent parts have been too much neglected; hence the reaſon why names have often been improperly applied, and diſeaſes uncertainly defined, and claſſed unnaturally; for if ever any good can be done by noſology, it muſt be by claſſing diſeaſes in a natural order, as far as they will admit of it, and this muſt be done at the bed-ſide, and not in cloſets from books.

Thoſe whoſe ſpheres of practice have been much confined, would have all diſeaſes, of whatever variety, which have gone under the ſame names, however different in their appearances and ſymptoms to agree in all reſpects, with regard to the treatment, with ſuch as they may have happened to ſee; whereas a greater variety of experience, would have taught them otherwiſe, if they would only employ their ſenſes, and their reaſon, in diligent obſervations on the phenomena of diſeaſes, their natures, and cures; but particularly the animal œconomy, and the operation of morbid cauſes upon it, and the means by which they bring about their effects, requiſites apparently too much neglected by many practitioners.

One great cauſe of theſe abuſes is very obviouſly to be traced to the imperfect modes hitherto too often practiſed, in the education of medical gentlemen; for whilſt teachers are the examinators, it too much reſembles a father's recommending of his ſon: and in this manner, they ſend phyſicians into the world, without ever initiating them into the practical parts of a medical education; ſuch as is commonly given at thoſe nominal ſeminaries, where they make a pretence of teaching medicine, without hoſpitals, or diſſections, or any other part of the practice of medicine. In ſuch places, young men may learn to talk, and read of diſeaſes: but they never will learn to cure them there. Theſe inſtitutions take their origins from the times of Gothic ignorance, when all literature and ſcience was confined to the clergy; for then the Pope only could found univerſities; and biſhops could make phyſicians, which they did as commonly, and with as much eaſe as they could confer holy orders. The biſhop of London, was the perſon then to be applied to for a licence to practice medicine in the city; and even to this day the biſhop of Canterbury has the privilege of making phyſicians.—Although ſince the eſtabliſhment of the college of phyſicians, he only makes one during his incumbency; it is fortunate that ſuch an eaſy introduction is not more common.

Paying too much attention to ſyſtems of medicine, is another great ſource of error, eſpecially as they are ſo generally compilations, and more frequently the products of fertile imaginations, than of real experience. It is very well for a young man, at his beginning the ſtudy of medicine, to learn the doctrines of the moſt unexceptionable ſyſtem, in order to gain an idea of the diſeaſes of the human body, on a ſmall ſcale; the ſame as in learning geography, we ſhould firſt learn the doctrine of the globes, and maps of the world on a ſmall ſcale, before we can well underſtand the maps of the different countries, and provinces.

In the ſtudy of medicine, we may gain a general idea of diſeaſes, by attending lectures, and reading ſyſtems of medicine; but theſe muſt give way to practice and compleat treatiſes, and the obſervations of well informed practitioners: who have made it their buſineſs to uſe their own ſenſes, in the courſe of their experience, &c. to improve our knowledge, and treatment, of one particular diſeaſe; for this may be within their abilities, or a claſs of diſeaſes, in which they have had much practice, and have introduced ſome improvements, either in our knowledge of their nature, or treatment.

Mr. Potts who did ſo much honour to himſelf, and to ſurgery; in his lectures always cautioned againſt ſyſtematic writers gaining too much credit; becauſe all ſyſtematics muſt be compilers in ſome meaſure. At the ſame time he gave ſome neceſſary hints with reſpect to the writings of inexperienced young men, who ſometimes hurried away by a volatile genius, are fond of ſpeculations, and worſhipping the idols of their own making, and would willingly perſuade others to do the ſame, that they might gain the honour of being the leaders of ſects. Although they may be as ill founded, as the baſeleſs fabric of viſion! a dream, or creature of the imagination.

There are another ſect of intruders on the public, no leſs hurtful than either of the two foregoing, and no leſs taxers of ſcience, and good ſenſe. Theſe are the compilers who make a trade of book making, whether they are qualified to write or not; taking to pieces the beſt works of others; by this means multiplying books, without adding any thing to the common ſtock of human knowledge, either in medical or philoſophical ſcience.—Such performances are only adapted to very ſuperficial inquirers, as they give ſome imperfect information on many ſubjects; but of none compleat.

BILIOUS AFFECTIONS,

AND

DISEASES of the LIVER.

IN the ſummer, and autumn, bilious diſeaſes are ſo very common amongſt every claſs of people, that they appear to be a ſubject worthy of ſome conſideration, to enquire into their cauſes, and the methods of cure beſt adapted to them. It is a popular opinion, in all warm climates, that the bile is a very frequent, or even a general cauſe of diſeaſes; without often carrying their inveſtigations any farther into their cauſes, &c. eſpecially among the natives of colder countries, who have lately moved thither; but as it would not be agreeable to phyſical accuracy, to give a blind aſſent to popular opinions, even thoſe of a more refined origin; it is our duty to collect experiments, and obſervations, and then to confine ourſelves to the ſtricteſt rules of reaſoning.

The nature of the bile itſelf, as a fluid, has undergone repeated chymical analyſis, and its properties, and uſes have often been examined, particularly by Baglivi, Mr. Long, and many others of the latter chymiſts; but we muſt not ſtop here, for we ſhould conſider its phyſical properties, in the human body, both in health and in diſeaſe, and this is only to be learnt by experience, in the body itſelf, and not by any analyſis—and we muſt conſider how far it is an active, or only a paſſive agent, in theſe reſpects, and conſequently how to alter, or regulate its ſuppoſed ravages on the animal frame; or what we may, in the courſe of our reſearches, find more near to nature and truth. By this means we may learn how to regulate the cauſes of the morbid effects of the bile; for if we can here aſcend one link farther in the chain of cauſes and effects, we approach ſo much the nearer to the ſource of truth; and are the leſs liable to fall into error.

The regurgitations, and other aberations of the bile, are moſt frequent in the latter end of warm ſummers, and in the beginning of autumn, after the greateſt heats are over; and in warm climates; they occur frequently in thoſe who have lately arrived there from colder climates—but not ſo frequently among the natives, nor thoſe who have reſided ſome years there, and whoſe habits of body are accommodated to their ſituation. This is a proceſs which actually does take place, and opens a field for experimental phyſics.

It is ſomething remarkable in modern times when we have neglected the fluid pathology, ſo long after being convinced of the falacy of theſe ſpeculations; that we ſhould yet retain the bile, though a fluid, in all its majeſty, and make it an agent ſo univerſally active, as it is ſuppoſed to be, in the production of diſeaſes; on enquiry however, we may poſſibly find, that here we are only deceived, by ſenſible appearances, taken inconſiderately from ſuperficial obſervations. We can find in medical hiſtory that the pathology of the fluids is much older than even Hippocrates, the fluids having been aſſigned their different provinces, and claſſes of diſeaſes by the older Grecian philoſophers, before either the father of medicine, or his preceptor Democrates, wrote or taught; and if we except the ſuppoſed hereſy, introduced by the methodic ſect of phyſicians, and their adherents, it continued in vouge until about the beginning of the eighteenth century; for the chymical hypotheſis, neither proved nor diſproved it; neither did the archeus of Van Halmont, nor the mechanical theories, in any meaſure ever oppoſe it, but ſo far from it, the doctrine of the moving ſolids as delivered by Hippocrates was almoſt forgot, by thoſe ſpeculators on the fluids. Baglivi was one of the firſt ſucceſsful oppoſers of theſe ſpeculations, as may be ſeen all through his works, and alſo, Hoffman, ſo that at preſent, unleſs in the caſe of the bile, there are very few advocates for a fluid pathology, &c. the cauſes of this may merit inquiry at preſent.

The bile is the only fluid of the human body, which differs very much in colour from every other of our fluids, And therefore, whenever it is any where diffuſed in the ſkin and eyes, out of its natural courſe the biliary ducts and inteſtines, it becomes remarkable, by its very ſenſible colour; and according to a popular way of accounting for cauſes and effects. Whenever any two unuſual appearances take place together at any time, the one is generally ſaid to be a conſequence of the other, though they may have little or no relation to one another. So that the bile, being very viſible, when put out of its proper courſe, by any obſtruction, or irritations, or when ſecreted in larger quantities than common, by reaſon of any thing ſtimulating the liver, or even the enterance of the hepatic duct, into the inteſtine by being ſtimulated, or the ſtomach, or inteſtines, being either ſtimulated, or otherwiſe morbidly affected; the liver ſympathiſes by means of the intervention of the biliary ducts; but many other parts, as the pancreas, ſalivary glands, ſkin, and even the kidnies, likewiſe ſympathize with the ſtomach, &c. ſo that was the pancreatic juice, or ſaliva, &c. as viſible, when diffuſed through the ſyſtem, as the bile, we ſhould have as many pancreatic, ſalivary, and ſuch like diſeaſes, as now we ſuppoſe we have of bilious diſeaſes; but theſe other fluids, not appearing ſo viſibly, are totally neglected, whatever evils they may be the cauſes of.

As to the appearance of the bile, we can only account it a ſymptom; the buſineſs of the phyſician is to inveſtigate the cauſes of the ſymptoms, their modes of action, and their conſequences, &c. and not to ſtop at external appearances. But without any further conſideration, it would appear abſurd to ſay that the bile, or any other fluid of the human body, is the cauſe of its own degeneracy, whether in quantity, or in quality: but for the cauſes of theſe morbid appearances, we are to examine the ſecreting glands. With regard to the redundance of the bile, it is known to be a general law of the animal economy, that when any gland, or any of their ducts or membranes are irritated, their ſecretions are increaſed; and this as often happens by the membranes or ducts, &c. of the liver ſympathizing with thoſe of other parts, in their vicinity, or with parts of a ſimilar ſtructure, and functions, though ſeated in diſtant parts; therefore, when the membranes of the eye are irritated, the lacrymal gland ſecretes more tears, when the ſalivary glands are irritated by pyrethrum, tobacco, or mercury, they ſecrete more ſaliva; and ſo of the muccous glands of the noſe; and the kidnies being irritated by dieureticks, they ſecrete more urine; and likewiſe when the liver, or its membraneous ducts are irritated by any means, directly or indirectly, an increaſed ſecretion of bile is the conſequence, even although the primary ſeat of the irritation may be in the duodenum, or even in the ſtomach; in which caſe it takes place by ſympathy, or conſent: as we may obſerve is the conſequence of the operation of ſtrong emetics, or rancid, oily, or acrid ſubſtances, being contained in the ſtomach, or duodenum; for the irritation of a gall ſtone in the biliary ducts, cauſes both ſtrictures of the ducts, and a larger ſecretion of bile; but in theſe caſes, as the bile has not liberty to paſs by its natural courſe, it is abſorbed by the minute branches of the vena cava. And the abſorbents regurgitates into the ſyſtem, and this is the common way in which a jaundice is formed; and the whites of the eyes, the ſkin, and even the urine becomes deeply tinctured with the yellow colour of the bile;. and if any diſeaſe can be ſaid to proceed from the bile, this would appear to be the moſt likely one; but on conſideration again, it is whatever cauſes the ſtony concretions, that is the cauſe of all the other ſymptoms which occur in the jaundice, and of the diſorder itſelf.

Choleras, diarrheas, and dyſſenteries, have been often attributed to redundancies of the bile. It is very certain, that an increaſed ſecretion of this fluid, may, and generally does, accompany all theſe varieties of diſeaſes of the inteſtines, not as their cauſe, but in conſequence of the irritation, which cauſes the complaints, after the manner we have juſt deſcribed, and as it is treated more at large under the head of the diſeaſes we have mentioned. Any thing obſtructing the free deſcent of the bile, through the inteſtines, as hardened excrements, ſpaſmodiac ſtrictures, or any acrid, irritating, or even ſedative matter, perverting their functions, and diſturbing the periſtallick motion, will cauſe a regurgitation of the bile into the ſtomach, as well as an increaſed ſecretion of it. And hence, together with choleras, &c. we hear of bilious cholics, bilious fevers, and a variety of other faults attributed to the bile; whereas in accuracy of language, they appear only in conſequence of the original cauſe of theſe irritations, ſo far is it from being the efficient cauſe itſelf. It is on this falſe ſuppoſition, of the bile being the immediate cauſe of theſe diſeaſes, that we hear of ſo many popular remedies for ameliorating the bile, eſpecially in ſummer and autumn, when diſeaſes accompanied with an increaſed ſecretion of bile, are moſt frequent. But any one who will ſeriouſly and judiciouſly conſider theſe matters, muſt ſoon be convinced how futile are all ſuch ſpeculations, and the practices founded on them. Here it may be ſaid that we are going in direct oppoſition to popular opinions, and eſtabliſhed prejudices; but as the inveſtigation of truth, and ſcientific principles of phyſic, and the healing art, are our objects, it may often be neceſſary to deviate from the general opinions of mankind; but here we have the happineſs of being ſupported by ſome of the moſt eminent phyſicians of the preſent century; and alſo by that which we put more dependance in, our own experience. Popular opinions muſt be reſpected; but it is ſacrificing with too great a degree of condeſcenſion, to follow them into error, in any ſubject with which our line of life leads us to be converſant; and of courſe to ſee farther than the majority of mankind can ever expect to do. But many profeſſed practitioners, talk of bilious diſeaſes, and of remedies for the bile, as though it was an animated ſubſtance. This we know may, and often does happen, in conſequence of their accommodating their language to the common opinions, as they may ſometimes mention diſeaſes of the blood, or other fluids; but it may be, that ſome of them do not know better, through neglect of neceſſary information.

Bilious fevers are terms ſo common, that any perſon ignorant of the economy of the animal body, and of its diſeaſes, would be apt to imagine that the appearance of bile was a characteriſtic of a ſeparate ſpecies of diſeaſe; it appears however in a great variety of diſeaſes. But although the appearance of bile, only points out ſome morbid affection of the firſt paſſages, the liver, or biliary ducts, yet it ſhews itſelf in many diſeaſes, or even without any other cauſe, than that of having taken an emetic; although it appears more frequently in ſome ſeaſons, climates, and ſituations, ages, ſexes, &c. than in others; yet it is not by any means a diſcriminating, or characteriſtic mark of any one ſpecies, but only a ſymptom of a variety of diſeaſes; and when it appears early in autumnal remittents, eſpecially in thoſe whoſe malignity is heightened by infection, it is a very bad ſymptom, if it appears before the fifth, or ſeventh day, in the eyes, or the ſkin. For it denotes a great degree of irritation about the biliary ducts, liver, &c. which moſt probably ariſes from their ſympathizing with the ſtomach; and the head-ach, there is no doubt does ariſe in this manner from the ſtomach; for there is no part, the ſkin excepted, which ſympathizes ſo commonly with the ſtomach, as the head does, in all its affections: hence the head-aches, which ſo generally accompany a ſick ſtomach.

But we cannot with any propriety accuſe the bile of being a cauſe of diſeaſes—a fluid whoſe ſecretion is increaſed by the irritation of its ſecreting gland, which irritation is the cauſe of the phenomena. When the ſecretion of the ſaliva, urine, &c. are increaſed, by their ſecreting glands being ſtimulated, we do not ſay that the ſaliva, &c. is in a diſeaſed ſtate, but turn our attention to the ſtimulating cauſe, whether mercurials, or other ſtimulants, as the ſole cauſe of all the appearances, &c.

And in the ſame manner ſhould we conſider the ſecretion of the bile, when it is either deficient or redundant. When the ſecretion appears to be defective, it is evident that gentle ſtimuli are required, to the (prima viæ) firſt paſſages, and the hepatic ſyſtem, as ſaponaceous cathartics, and gentle mercurial medicines, in the form of pills; and bitters, as the columbo root, or others of a laxative quality. When there is an increaſed ſecretion of bile, it is evident that there is ſome uncommon ſtimuli, or irritation in the firſt paſſages, with which the liver always ſympathizes, or in the liver itſelf; and in this caſe, mild ſedative purgatives are indicated, as caſtor oil, ſal rochel, or common ſalts; and by this means, it is evacuated in the moſt gentle manner, and the irritation allayed: but I would here caution againſt the common practice of exhibiting emetics in theſe caſes, as they often ſtimulate over forcibly; and as ſtrong emetics always increaſe the ſecretion of bile, which generally appears after the ſecond, or third recurrence of the vomiting, which is the cauſe of the common opinion, that the bile which is brought up, was in the ſtomach before the vomiting began, and conſequently, that it was the cauſe of the ſickneſs, when it was only forced there, by the agitation of the viſcera, in vomiting. It may be proper alſo, to guard againſt the too common uſe of emetic tartar, it is at beſt a very unmanageable medicine; but in theſe caſes, and eſpecially in warm climates, or ſeaſons, it is often pernicious; on this account it ſhould only be uſed in conjunction with ipecacuana, as ten grains of this root, with one or two of the antimonial tartar, forms a very ſafe, and generally a uſeful emetic, when requiſite; but unleſs in torpid habits, emetics are by no means innocent medicaments, as a frequent uſe of them weakens the digeſtive powers of the ſtomach, and cauſe an apparent neceſſity for their repetition; and the more frequently they are uſed, the more do they appear to be demanded; but gentle laxatives, and bitters, obviates all theſe ſenſations in a more effectual manner.

In the beginning of fevers, particularly remittents, redundancies of bile are very common; evidently cauſed by irritation, about the ſtomach, &c. The bile here, is not the cauſe of the fever; but appears in conſequence of it. By its quantity part of it may get into the ſtomach, and will, whilſt there, probably contribute to increaſe the ſickneſs, &c. but the ſafeſt way of evacuating it, is downwards; by this means the feveriſh commotion is allayed, in a much better manner than by emetics. In caſes of intermittents, emetics are a neceſſary part of the cure, and are conſiſtent with good practice; but particularly when there is no inflammatory diſpoſition preſent—but when inflammation prevails, their propriety is more doubtful.

In caſes of obſtructions in the biliary ducts, by an inflammation, contracting their diameters, accompanied with an inflammatory ſtate of the ſtomach, &c. as in ſome remittent fevers, but particularly in the peſtilential, or yellow fever, there is generally ſuch a degree of irritation about the ſtomach, that emetics are inadmiſſible, unleſs given before the fever is fairly formed; for then they may be given to advantage in ſome caſes, but otherwiſe they excite ſuch commotions as cannot be alledged afterwards; for a ſpontaneous vomiting is a common occurrence in theſe affections, which ſometimes cannot be alledged by any means. When biliary concretions are the cauſe of the obſtruction, as they ſometimes are in the jaundice; then emetics may be advantageouſly uſed, in order to expel them in a forcible manner, by the concuſſion of the parts—But this ſtate is beſt determined by the abſence of inflammation; a conſideration of ſome importance in this place, as it is in all diſeaſes where inflammation may happen to ſhew itſelf as a ſymptom; for an inflammation ſeldom is an original diſeaſe, but a concomitant of many, as it very much depends on the patients habit of body, whether it appears or not.

There are varieties of pills advertiſed, under the character of antibilious, and purgative pills, and commonly ſuppoſed to be ſpecifics in theſe affections; but as the moſt material parts of their compoſitions are aloes, calomel, ganeboge, and other draſtic ſubſtances—the habitual uſe of them is generally attended with pernicious conſequences; for it will be found by experience, that when any one has got into a habit of uſing them, the neceſſity for repeating them, is thereby increaſed; as it is a property of all theſe draſtic cathartics, and of rhubarb alſo, to leave the habit more coſtive after their uſe; beſides that by getting into a habit of uſing them, it is very difficult to be left off. But the neutral ſalts, or caſtor oil, are not attended with theſe inconveniencies, for they ſcarce ever create a neceſſity for their continuance—neither do they produce another, and a much greater inconvenience which the materials of the antibilious, and purging pills do in common; this is by their ſtimulating the parts about the fundament, &c. They very frequently cauſe that diſagreeable, and painful diſeaſe, the piles; this we have often known to take place from the habitual uſe of theſe purging pills, which the patients had been uſing unſuſpectingly, until warned againſt their uſe. Aloes has been long known to be acceſſary to this diſeaſe; and every other draſtic purgative, poſſeſſes the ſame properties, in a leſs, or greater degree, principally by their ſtimulating the rectum, &c. and of courſe inviting a greater efflux of humours to the parts, and weakening them, by exhauſting their vital energy, &c. as ſtrong ſtimuli applied to any part always does, by cauſing an efflux of fluids to the parts, in the firſt inſtance, and after their ſtimulant effects are over, leaving the parts in a weakened, and relaxed ſtate, &c. So that any one who has juſt ideas of the animal œconomy, and the effects of medicines, will ſoon perceive the propriety of the cautions, endeavoured to be inculcated here.

LETTER I.

On the Causes of of Bilious Diseases, their Nature, &c.

Qui bene judicat, bene curat. Baglivi Opera. p. 744.

THE bile is a fluid, of all others in the human body, the moſt conſpicuous, if we except the blood; therefore, when it is by any means put out of its uſual courſe, either by being regurgitated into the blood veſſels, and by that means diffuſed through the ſyſtem at large; and in this manner cauſing a jaundice; or by an increaſed ſecretion, and regurgitation of it into the ſtomach, by its uſual courſe down the firſt paſſages being obſtructed; in this caſe, it is accompanied with ſickneſs, and vomiting, &c. and often with a ſeveriſhneſs, laſſitude, and anxiety, &c.

If we inquire into the cauſes of theſe diſordered appearances of the bile, we may generally trace them to ſome irritation, about the ſtomach, or firſt paſſages; for the liver and ſtomach ſympathize very generally with one another through the medium of the biliary ducts, and inteſtines—as may be obſerved after drinking much of wine, or ſpirituous liquors; for in this caſe there are often a redundance, and a vomiting of bile the next day: or any other ſubſtances irritating the ſtomach, ſuch as rancid, or indigeſtible food, are common cauſes of increaſed ſecretions of bile; and when increaſed, it very readily gets out of its original courſes, in various ways.

Profeſſor Richter, of Gottingen, who appears to have paid more attention to bilious diſeaſes, than is common in high latitudes, where they do not frequently appear—is much inclined to trace them all to irritations, about the ſtomach and liver; even the jaundice itſelf, he traces to this ſource. We have been long in the perſuaſion, that in all caſes of redundancies, and aberations of the bile, were commonly cauſed by irritation, either of the firſt paſſages, or of the liver, or biliary ducts, although they are often cauſed by theſe ſympathizing with diſtant parts; for it is a common occurrence for injuries of the head to cauſe a vomiting of bile; but this we believe never happens, unleſs when the membranes of the brain are injured; but the ſame thing takes place, commonly from any giddineſs, cauſed by an unuſual motion, as ſailing, riding in a carriage, or turning round often, &c.—here we believe, that the ſympathy ſubſiſts between the membranes of the brain, as the dura and piamater, and the ſtomach, inteſtines, or biliary ducts, as they are parts more ſimilar in ſtructure, than the brain, and liver, although both reputed glandular; there is but little ſimilarity in their ſtructure, or modes of action, &c. one or other of which, when vicinity is not the cauſe of the ſympathy we expect to find. For nervous ganglions, and vicinity of parts, are long known to be ſources of irritations, being propagated from one part, to another, by ſympathy; but that which depends on a ſimilarity of ſtructure, uſes, or actions, is a later diſcovery, &c. but of a very extenſive application in the animal œconomy.

There is another, and more wonderful manner by which biliary irritations are produced, that is through the medium of the ſenſes; and the mind, which they conſequently ſupply with ideas; for anger, or envy, &c. and other violent paſſions, have often excited increaſed ſecretions, and vomiting of bile; but this will appear the leſs wonderful, when we reflect on the various manners in which the ſenſes, and the mind, act on the ſecretions, and functions of our bodies; and every ſeparate one of the ſenſes, has its peculiar irritations, which excites its actions in preference to all others, as ſound to the ear, light to the eye, odours to the noſe, and taſte to the tongue, &c. but touch, or feeling, appears to be a more generally diffuſed ſenſe than any other; for all parts of the body appear to partake of it in various degrees. But here we only wiſh to direct the attention to the diſtinction of ſtimuli, their modes, and laws of action, in order to impreſs their uſes on the mind, &c.

The bile appears in ſo many diſeaſes, that it cannot mark a ſpecific character in any; but there is another circumſtance to be learned, from its appearance in great quantities, we may be certain that there is ſome irritation preſent; this is moſt conſpicuouſly ſeen in choleras, or bilious vomiting, and diarrheas, cholics, &c. for in theſe affections, the irritation, and diſcharges, of bile, are in the greateſt exceſs, ſo that the cholera is more purely a bilious diſeaſe, than any other, as its name imports; and there are many other diſeaſes, in which the bile ſhews itſelf, as hepatic diſeaſes, fluxes, and fevers, principally thoſe of the fall. But we do not intend to go into the particular treatment of each of theſe, any farther than the bile is a predominant characteriſtic.

Cholera takes its name from the Greek name of bile. It often ariſes without any preceding diſeaſe of the ſyſtem, but thoſe of irritation, and increaſed ſecretion: it is moſt frequent in the autumn, or ſummer ſeaſon, when new fruits, &c. are common, and the weather changeable; for a ſudden cold, or obſtructed perſpiration, are very apt to be active cauſes of its appearance; but any great irritation in the ſtomach, or inteſtines, ſuch as indigeſtible food, rancid or crude matters in the firſt paſſages, and ſudden cold; by the ſympathy which ſubſiſts between the ſurface of the body and the ſtomach, and from it by the intermediation of the inteſtines, and the biliary ducts, with the liver, where the ſecretion is performed. In ſome caſes of diarrheas, and dyſſenteries alſo, the bile appears to bear a very conſpicuous part, ſo as even to have acquired for them the name of bilious; but unleſs there is ſome morbid or laſting diſeaſe of the viſcera, they may be conſidered only as varieties of cholera, being leſs dangerous, but more tedious in their cures; but there are many other ſymptomatic bilious appearances, which take place in different diſeaſes, and ſtates of the body, under various names; but in all theſe caſes, there are ſome irritations, either in the biliary organs immediately, or by their ſympathizing with other diſeaſed parts; and conſequently as the morbid cauſes are ſo various, ſo alſo muſt the means of relief be. For inſtance, in our autumnal fevers there are always increaſed bilious ſecretions, cauſed by the great irritation which prevails in the ſtomach in theſe diſeaſes; and in dyſſenteries, and diarrheas, the ſtomach and inteſtines are in a ſtate of irritation, and conſequently are attended with increaſed bilious ſecretions. And the peſtilential fever, which is always propagated by infection, &c. takes its popular appellation from the yellow colour cauſed by the bile being obſtructed in its courſe into the firſt paſſages, by irritation, and conſequent conſtriction, either inflammatory, or ſpaſmodiac; which appearance, occurring before the fifth day, is a very bad ſymptom, as it is an indication of the violence of the irritation, and its conſequences: but in the early ſtages of this diſeaſe, there are often appearances of bile making its way into the firſt paſſages; and of its being evacuated, either by vomiting, or by the inteſtines: this takes place, either before the irritation is arrived at ſuch a heighth as to ſtop its courſe, or where it does not arrive at ſuch a heighth as to ſtop the biliary duct, as in remittents, dyſſenteries, &c.

From the analyſis of the bile, we can get but little information into the uſes of this, or any other fluid, in the animal economy: or the cauſes or conſequences of its deviations from a healthy ſtate; in order to trace which, it is to the living ſolids that we muſt attend, the ſtate of the vital energy, irritability, and inherent ſtrength; and the cauſes of the morbid actions, or irritations, ſenſations, &c. We are to pay particular attention alſo to the habits of life, temperaments, ſexes, and ages, which are moſt expoſed to redundancies, and other irregularities of the bile. And from obſervations, we ſhall find the moſt profuſe ſecretions in the young and plethoric males, particularly when they live freely, and indulge themſelves in the uſe of wine, ſpirits, or fermented liquors, as cyder, porter, or punch; which laſt we conſider as the moſt pernicious of all compoſitions, by its effects on the ſtomach; its continued uſe, deſtroying the digeſtive powers thereof, and producing a permanent weakneſs of it; and alſo by the exceſſive ſecretions of bile which it is a means of producing, at firſt and the deficiencies, which are the common conſequences of its habitual uſe; acids, and punch alſo, whet the appetite at firſt, but hurt it effectually by the long continued uſe of them; this is ſimilar to the effects of all ſtimulants, when uſed over freely, they firſt produce ſtrong action, but finally deſtroy it, by their ſuddenly deſtroying the vital energy; and it is in this manner alſo that ſpirituous liquors produce their baneful effects, eſpecially when uſed in the early part of the day, &c. a deteſtible cuſtom which ſome claſſes of men are unfortunately too fond of, whoſe principal ſtudy is moſtly directed to objects no higher, than how to acquire them. The ſight of ſuch practices are very diſagreeable to my feelings, from the many inſtances which have fallen under my own obſervation, of the bad effects of forenoon-drams; it ſtrikes me with a ſenſation of horror. Even the effects of bitters, are by no means innocent, eſpecially to thoſe conſtitutions, who may digeſt their food very well without them; and where the air is pure, and in the early part of ſummer, they are pernicious; for at this ſeaſon, the vital energy which is accumulated in the winter, being ſet in action by the ſtimulus of the heat, is commonly active enough of itſelf; but additional artificial ſtimuli deſtroys it. Bitters may often be neceſſary in weak habits of body, whoſe digeſtions are imperfect, eſpecially in moiſt, ſultry, or wet weather, in the latter part of the ſummer, and autumn, taken with port wine, and water, eſpecially where intermittents prevail.

In order to convey juſt ideas of the origin of the bile, and of its modes of ſecretion or ſeparation from the blood, we ſhall endeavour to convey as conciſe a view of it as poſſible, in a few words—we may premiſe that all the fluids, which are ſeparated from the blood, are ſecreted, and formed by their own peculiar glands; the kidneys ſecrete the urine; the glands about the mouth ſeparates the ſaliva, and the liver is the gland which ſecretes the bile, or gall, and from thence it is conveyed by the ramifications of the biliary ducts to one trunk, the common duct of the bile, from whence there is another ſmaller duct, which occaſionally conveys part of it to the gall bladder, which ſerves as a reſervoir to retain it until wanted, during the digeſtion and aſſimilation of the chyle, &c. whilſt the bile remains in the gall bladder; it is rendered thicker, by its thinner parts being abſorbed, and it becomes ſtronger. But this ſecretion of the bile has a peculiarity, not to be found in any other part of the body; all other ſecretions are made from arterial blood; but this alone is collected from venous blood, returning from the inteſtines, ſtomach, ſpleen, meſentery, &c. which takes this peculiar courſe, in its way to the heart; and is here diſtributed by the branches of a vein, called the porta; in which it has been remarked that the circulation is extremely ſlow, and the ſecretion a thick ſubſtance—although the liver itſelf, is rather an inſenſible part, yet it is very irritable, and very readily ſympathizes with other parts, and by that means has its ſecretions increaſed, or diſordered by them; but the biliary ducts are probably active agents in theſe offices, by their intervention and ſympathies.

It is a property of all glands to have their ſecretions increaſed by irritation, when immediately applied to them; and many have their actions increaſed, even by ſympathizing with other parts, where the primary irritations are ſeated; of this laſt nature is the liver, &c. Any acrid ſubſtance taken into the mouth, increaſes the ſecretion of ſaliva, by irritating the ſalivary glands; and any irritations of the eyes cauſes an increaſed ſecretion of the tears, by the irritation of the lachrymal glands, which ſecretes them. Irritation of the kidnies alſo increaſes the urine; and of the liver, or its appendages; irritations or ſympathies, with ſome other parts, cauſe an increaſe of the ſecretion of bile. But here it is to be noted, that in caſe they are very often repeated, or long continued, the irritations leſſen in their effects, unleſs their forces are increaſed; but after the action of ſtrong ſtimuli, the weaker will produce little or no effect, for ſome time at leaſt, until the energy, or ſuſceptibility of the parts are again reſtored. Theſe appear to be laws of the animal œconomy, and are found to prevail in their full force in the functions of the liver; a conſideration of theſe circumſtances will elucidate many of the appearances, and irregularities of the biliary ſecretions; as the redundancies and deficiencies of the bile—warm weather and a vitiated atmoſphere, are prediſpoſing cauſes to theſe redundancies; ſlight impreſſions may cauſe them to appear when ſo prediſpoſed; ſuch as cold air in the evenings, or mornings, getting wet by rain, &c. and fermented liquors, if too new, or flat, ſuch as cider, or beer, to thoſe unaccuſtomed to them.

Analyſis of the bile has been commonly reſorted to, as a means by which to detect its aberations from a healthy ſtate, as well as to inveſtigate its properties and uſes, in the animal œconomy; but although this mode of inveſtigation might have been thought of much importance, whilſt the pathology of the fluids was in its full eſtimation; it is rather a matter of wonder that, now, when we know that this, as well as every other ſecreted fluid, are as they happen to be formed by their reſpective glands, &c. we muſt turn our attention to theſe in particular, and conſider the ſtate and mode of action, which gives origin to the different ſtates of the bile, for it and every other fluid, when ſecreted in large quantities, is commonly thin; but exceſſive irritation here, as well as in the kidnies, will cauſe the ſecretion to be mixed with the red blood, which here being dark venous blood, from which the bile is ſecreted, exhibits, when ſo mixed with bile, &c. a dark, ſediment—ſuch as Hippocrates named atrabilis, and the ſame which has been often ſeen of late, under the name of black vomiting. It is very proper that we ſhould be acquainted with the chymical analyſis of the fluids—but this leads us only a ſhort way in our phyſical reſearches, &c. for what information could we obtain of the diſeaſes of the ſalivary glands, from analyzing the ſaliva, or of the kidnies, from the urine; they will only ſhew whether there are any irritation preſent, or not.

Retention of the excretions, or their being ſuffered too long to accumulate in an unuſual manner, are often the active cauſes of exciting a feveriſh diſpoſition, eſpecially in habits already prediſpoſed by the action of heat, vitiated air, &c. this appears to be cauſed by the irritation which theſe excrementitious ſubſtances produce, when acting on the irritable containing receptacles, and the ſympathies, which they excite in other parts, and alſo their preſſure on the parts in their vicinity, and the longer the retention, the more acrimonious does theſe excretions become; which, together with the accumulation of the quantities, &c. often prepare the habit for ſerious affections.

From various analyſis, the bile has been found to conſiſt of a reſinous ſubſtance, a bitter tincture, and a lymph, or watery part, but no oil as was formerly ſuppoſed; the reſinous part contains the colouring matter, and is ſuppoſed to be excrementitious, &c. and to aſſiſt, by its ſtimulus, in promoting the motions of the inteſtines, and to promote the propulſion of their contents; for when the bile is not produced in ſufficient quantities, there is generally a coſtiveneſs preſent. The tincture appears to be the only active part of it, which can enter the lacteals—and it has been thought to be of ſome uſe in animalizing the chyle, or preparing it to form part of the blood. The lymph is always coagulated, by its mixing with the contents of the inteſtines, and it is by this means rendered excrementitious; the milk and the fat of animals contain an acid; but all the other parts an alkali; and the bile contains alkali in a large proportion; it is therefore ſaid to be highly animalized; but the chyle yields no acid.

LETTER II.

Of the Treatment of Bilious Affections, &c.

IT may be neceſſary in the firſt place, to take notice of a very common mode of procedure, which is followed by great numbers, for evacuating the bile. It is a very common opinion that the bile itſelf, is the primary cauſe of the numerous evils which take place, in thoſe ſtates of the body in which it appears. But if we will only carry our inquiries a little beyond the external objects of our ſenſes, we may be led to inquire into the cauſes of the appearances; if we follow this mode of reaſoning we ſhall find that there are always ſome irritation or ſtimuli preſent, for the immediate cauſe; theſe irritations or ſympathies we have already inquired into.

But the pernicious tendency of conſidering the bile itſelf as the active cauſe in theſe caſes is, that there are often very forcible means uſed for its evacuation, by ſtrong emetics and purgatives which will no doubt carry off the bile; but at the ſame time, by their ſtimulant nature, they raiſe a commotion in the ſyſtem, often worſe than the original affection, and thereby increaſe the ſecretion ſtill more, for the preſent, with the additional inconvenience of leaving a coſtiveneſs behind—this is always the conſequence of the noſtrum pills, which are in ſuch frequent uſe, under the name of bilious, and antibilious pills, in which aloes, gamboge, rhubarb, ſcammony, &c. form the principal parts.

The different ſtates under which bilious affections frequently appear, being already taken notice of, together with their cauſes and modes of prevention. Here we intend to explain the rational modes of treatment, diveſted, as far as in our power, conſiſtently with the ſubject, of technical terms; a ſew not in general uſe, we muſt indiſpenſably uſe; but to theſe we ſhall be attentive to prefix conciſe explanations.

We take this opportunity of informing our readers, that we do not here mean to go into the nature, and treatment of all the diſeaſes in which the bile appears, we only mean to trace them ſo far as it is a predominant ſymptom. All the varieties of choleras, from the moſt ſlight and tranſient vomiting of bile, or even the queamiſhneſs, which frequently takes place in delicate perſons, in warm weather, and in females during the time of pregnancy, &c. are only milder varieties of affections, of the ſame nature; they commonly occur in warm weather, moſtly in the forenoons, after having made over free with vinous or ſpirituous liquors the preceding day, or from the unuſual motion of ſailing, &c. In theſe mildeſt appearances, of the affection, there are ſeldom any farther medical aſſiſtance neceſſary, than drinking occaſionally a little coffee, or any other mild diluting liquor, ſuch as warm milk and water; or if convenient, gruel, or broth, in order to ſooth the ſtomach, and to dilute its contents, &c. Drinks of this nature, are by far the moſt efficacious, which we are acquainted with in ſea-ſickneſs; for we have often uſed, and recommended them to others, and always found relief from a cup of coffee, gruel, or freſh broth, every hour or oftner. And although it does not always produce the deſired effect in the firſt, or ſecond draught, it will, we can venture to ſay, to a certainty, if perſiſted in, and that more effectually, than any other application yet known. And as this is as languiſhing as any ſickneſs, it alſo merits ſome conſideration.

That uneaſy ſenſation, which ſo commonly attacks wine bibbers, &c. the next day after an over doſe of liquor, accompanied with head-ach, ſick ſtomach, &c. is beſt relieved by reſt, and warmth of the ſkin, and drinking a cup of coffee, gruel, broth, or any other ſuch fluids, which the patient may prefer, through taſte or convenience, &c. And ſo ſoon as the ſickneſs is removed, exerciſe in the open air, ſuch as riding or walking, &c. may advantageouſly be had recourſe to—here it appears very plainly, that the affection of the head, is only derived from ſympathy with the ſtomach, both in the firſt and ſecond ſtates of intoxication; for in the firſt it is very evident, that the ſtimulus applied to the ſtomach, affects the brain, or rather perhaps its membranes, by ſympathy, long before the liquor itſelf, could have time to make its way ſo far—and after the ſtimulant effects are over, the ſenſations left behind, are pains, from the effects of the former ſtimulus, and preſent torpor.

The head-achs accompanying theſe affections, are evidently cauſed by the ſympathy, which ſo very generally prevails, between the ſtomach and the membranes of the brain, as there are no viſible connexion unleſs by nerves, or membranes, there may be a ſimilarity of ſtructure—but however the ſympathy is conveyed, we may eaſily prove it to be one of the moſt conſtant in the human body; for every diſorder of the ſtomach, cauſes head achs, whether they are cauſed by indigeſtible food, by ſpirituous liquors, or fevers, &c. And in many caſes, the head-ach gives us the firſt warning of the affections of the ſtomach. A ſtoppage of perſpiration alſo, by cold applied to the ſurface of the body, often cauſes head-achs by ſympathy, which are communicated in ſome caſes through the medium of the ſtomach; for we do not know of any ſuch direct ſympathy between the ſurface of the body and the brain, as there is between it and the ſtomach; and alſo between this laſt and the brain—for it has been often remarked, that geting cold by a moiſt air, was one of the moſt general cauſes of irregular ſecretions of the bile; the ſickneſs of the ſtomach, and head-ach, being an index of the ſtate of the ſtomach, on which theſe cauſes act.

The cholera not being a ſpecific diſeaſe, there are many varieties of it; but this is the caſe, even with the moſt purely ſpecific diſeaſe we are acquainted with, as the ſmall pox, for inſtance. But affections which are not ſpecific, may be rather conſidered as uncertain concourſes of ſymptoms in the conſtitution, which may proceed regularly, and ſimilar to one another, in many different perſons; but the various conſtitutions, habits, and temperaments, vary; even the ſmall pox and meaſles, and much more do the other uncertain concourſes of morbid actions, which cannot produce their likeneſſes. Choleras moſt commonly appear in the latter end of ſummer, or in the autumn; and from this circumſtance, we may often collect their cauſes. Inflammation is to be derived from the ſame ſources; for there is always a connexion runs through diſeaſes, for which we are ſometimes to ſearch in the patient's habit of body—but more frequently it is from external ſources, and conveyed through the medium of the air, food, drink; or by exerciſe; for there is ſcarce any diſeaſe ſo uncommon, but we may find ſome connecting cauſes between it and others, only with different grades in their violence.

The diſeaſes of the bowels with which children are ſo liable to be attacked, in the ſecond year of their age, in all the large towns of the United States, appears to be very much of the ſame nature as bilious affections: for they are commonly excited by the irritation of their teeth, cutting their way through the gumb, &c. or by worms, and often by both at the ſame time, when rendered weak, and irritable by the heat and impure air of towns, with theſe additional ſtimuli; and ſometimes by the uſe of fruits. From this it will appear that gentle laxatives, in order to clear the inteſtines of their contents, ſuch as caſtor oil; or Sal. Rochel, and mild antimonials at night, with warm bathing, never ſhould be neglected in theſe caſes: if there is reaſon to ſuſpect the preſence of worms, as a cauſe of keeping up the irritation, then ſome calomel united with purgatives muſt be uſed; their drink ſhould be warm and mild, ſuch as gruel, milk, &c.

Choleras, are often cauſed by eating crude, acid, indigeſtible fruit, or rancid butter or fat, or tainted fiſh, or other animal food; together often with expoſure to cold air, from the ſudden changes of the weather and an irritable habit, or one very ſuſceptible of morbid impreſſions.

When the bile appears in unuſually large quantities in fevers, or fluxes, they are named bilious from theſe appearances, but although we do not ſuppoſe it to be the cauſe of either of theſe affections, nor to have any ſhare in their natures, yet we confeſs, it is a cauſe of variety, and although only an accidental appearance, it ſhews the ſtate of the firſt paſſages, in a very clear light; particularly when it paſſes freely, and in large quantities into them, it is apparent that there are ſome irritation, or morbid action preſent in theſe parts, or in the liver itſelf. But the bile getting into the inteſtines, is not a certainty that the ducts are clear of obſtructions, for it often paſſes large concretions here. Great irritation cauſes either an inflammatory, or ſpaſmodiac affection of theſe parts, by which means the entrance of the duct is conſtricted, as by a valve, the inflammation here, may be either eryſipellatoſe, phlogiſtic, or inclining towards either, as the habit of the body is firm, or very weak and nervous: but there are, we have much reaſon to be perſuaded, often ſomething of a ſpaſmodiac nature in this part, when irritated.

Choleras are moſt frequent in the young, lax and plethoric, where the fluids bear a too great proportion to the ſtrength of the living ſolids; and where there are over great ſuſceptibility of morbid impreſſions, the almoſt conſtant vomiting and purging here denotes a great degree of irritation, and in order to allay this, warm fluids have been very properly recommended, warm milk by itſelf, or mixed with water, is very uſeful, or broth, gruel, &c. or any other thin, warm fluid, which the patient is moſt fond of; but there is another circumſtance of great importance in theſe affections, that is, to keep the ſkin warm, and if poſſible to promote a perſpiration, and in order to ſuccede, in this warm bathing is eſſentially neceſſary either the ſteam bath, or immerſion in warm water; and immediately afterwards, the patient ſhould be put into a warm bed, this is a mode of treating the affection which we can recommend as the moſt efficacious of any which has ever been uſed; and in caſe the irritation of the ſtomach is not allayed by theſe means, then oil of ſweet Almonds, or even common ſalad oil may be drank to the quantity of ſeveral ounces, giving two or three table ſpoonsfull at a time, and repeating it occaſionally; oil and milk have been long known to be very powerful in relieving irritation of the ſtomach, from acrimonious ſubſtances, or even poiſons; but not ſo generally for this diſeaſe.

Choleras are vomiting and purging, with great evacuations of bile, accompanied with ſickneſs, langor, and ſudden loſs of ſtrength—if any affection deſerves the name of a bilious diſeaſe it is this, &c.

But as there are many varieties of this diſeaſe from that which only cauſes a ſlight queamiſhneſs of the ſtomach, with an accidental vomiting to the violent affection, which kills in a day or two; the treatment muſt, of conſequence, be accommodated to the violence of the affection, there is no diſeaſe more certainly cauſed by irritation than this, and there is much reaſon for believing its ſeat to be in the ſtomach, or neighbouring part of the inteſtines, and if we were to admit a modern very faſhionable German term, it would appear to be of a Gaſtric nature, more properly than any other we are acquainted with; for it does not appear to be accompanied with inflammation, either phlogiſtic or eryſipelatous, but only irritation. And the recurrence of vomiting, is more of a ſpaſmodiac than of an inflammatory nature, and in this manner it is to be treated with warm bathing, ſoothing demulcents, ſuch as oil, or even laudanum in ſmall quantities, and often repeated, as it is not apt to anſwer on the firſt application, and may diſagree with the ſtomach itſelf, &c.

The large quantities of bile which appears in fevers, muſt depend altogether on the ſtate of the patient's habit of body, and that of the diſeaſe; particularly the preſence, or abſence of any inflammatory diſpoſition, or an irritable, and uneaſy ſtate of the ſtomach, which emetics, commonly increaſe, and particularly when an inflammatory diatheſis is preſent; in ſuch ſituations, gentle laxatives, anſwer beſt; of Rochal Salts, or caſtor oil, to allay the irritation, and if accompanied with an inflammatory diſpoſition, antimonial powder at night will be uſeful. But we are to aim at ſoothing, inſtead of increaſing the irritation of the ſtomach, for here vomiting raiſes ſuch perturbation in the ſyſtem, from the commotion cauſed by their operation, as is often very difficult to allay, and dangerous in its conſequences; even in dyſenteries, emetics are not at all times advantageous, nor even ſafe, eſpecially thoſe compoſed of ipecacuana, on account of its aſtringent properties, and its aptneſs to produce teneſmus—but the ſoothing plan is always the moſt preferable, where any irritation is preſent; and this is beſt effected by the neutral ſalts, or caſtor oil, or any bland expoſed oil, as that of almonds may anſwer; and in caſe the inflammation runs high, then antimonial powder ſhould always be uſed at night, in order to promote a perſpiration with warm drinks, warmth of bed, &c.

It has to many appeared unaccountable how it happens, that in ſome ſituations, and in particular patients, there is a deficiency of bile, in conſequence of the effects of warm climates; but this we hope will be as eaſily explained as its exceſs, which as we have obſerved is always moſt frequent in the young, and plethoric inhabitants of colder climates, &c. who have not been much expoſed to heat, but are lately arrived in warm climates, and conſequently retain their vital energy unimpaired; which are readily acted on by the external heat, or changes of the air, or other cauſes. But the deficiencies of the bile take place in thoſe, who have been in ſome meaſure exhauſted by a preceding expoſure to heat, and other ſtimuli, and are adapting more abſtemious habits of life—eſpecially when they become diſcontented, and debilitated by the effects of heat, and ſpirituous liquors. Here it is very evident that gentle exerciſe in the open air, relaxation from thought, or buſineſs, and mild ſtimuli, are very advantageous; ſuch as pills, compoſed of Venice ſoap, and calomel, not exceeding one grain of the mineral, to each doſe; or the blue pills prepared of extinguiſhed mercury, and the ſoap, of each two grains are preferable; the ſoap and bitters here, in ſome meaſure ſupplies the place of the defective bile.

The Information to be Derived from the Appearance of Bile.

THE information to be derived ſrom the appearance of bile in the ſyſtem, has not been properly attended to, either by the advocates for, or againſt its importance in diſeaſes; for ſome will have it to be of itſelf the primum mobile, of both health, and diſeaſes—but although we do not believe it to be ſuch an active agent, we may collect much information by attention to it.

The appearances of the biliary ſecretions, may, by thoſe who attend to them, ſerve for very uſeful indications, whereby to diſcover the ſtate of the ſtomach and of the liver; for by attending to all its various appearances in the firſt paſſages, in the eyes, on the tongue, and in the ſkin, &c. It will often give us more true information of the ſtate of the viſcera, than even the pulſe itſelf, or than any other external appearances; not as the cauſe of theſe affections; for with them it has nothing more to do, than the water in a dropſical perſon has, with its own collection.

Although the bile appears ſo conſpicuous as to attract much attention, its uſes in the body are but imperfectly underſtood, it has been analized, often enough to convince us of the inſufficiency of this mode of inveſtigation, in diſcovering the cauſes or conſequences of bilious appearances —or the properties of either fluids, or ſolids, or their modes of action; the bile, and the blood are different in colour from one another; and alſo from every other fluid of our bodies. And, therefore they are equally conſpicuous wherever they are diffuſed. The eye can ſoon detect their preſence, but the cauſe which brought them there, may be found out in another manner, from the few certain ſenſible facts, of which we are already in poſſeſſion.

From theſe we learn that the appearances of the bile are varied by many cauſes, as by irritation, inflammation, or by ſpaſms; and alſo by concretions, generated in the biliary ducts, or in the gall-bladder. It may be proper, to attend to each of theſe ſtates in their order; and to their cauſes and conſequences in the economy.

Irritations are cauſed in the biliary tubes in various ways, as by external cold affecting theſe parts through the medium of the ſtomach, by injuries of the head, through the ſame medium, but more frequently, and certainly, by ſome irritating ſubſtance in the ſtomach, or firſt paſſages, as indigeſtible food, or liquor, particularly punch, or crude, acid vegetables; or the effects of marſh miaſmata, or of infection—but theſe are taken notice of in other places; we would only premiſe that this is only irritation. But inflammation may, or may not follow as a conſequence of any of theſe irritations, and that, in proportion to the ſtate of the patient at the time, and the ſtrength of active cauſes, whether external cold, an injury of the brain, infection, &c. we believe that miaſmata ſeldom cauſes active inflammation. A ſpaſmodiac affection may alſo follow irritation, if the patients habit of body be diſpoſed to it, from being irritable and weak; for we are perſuaded that it altogether depends on the habit of body in which the patient is, whether an irritation cauſes only increaſed ſecretion, true phlegmon, eryſipelas, or ſpaſm.

Some uſeful indications with reſpect to the uſe of the bark, may be taken from the appearances of the bile, &c. for if there is a great ſecretion of it, apparent in the firſt paſſages, it ſhews on its appearance, that there are ſome morbid irritation there, eſpecially juſt after its firſt appearance: which ſhould be allayed, by lenient ſedatives, ſuch as caſtor oil, or ſalts, &c. by which the bile is carried downwards and alſo the irritation allayed; but when there are no inflammatory diſpoſition, an emetic may very properly precede the uſe of the laxatives, as in perfect intermittents, but after the irritation is by theſe, or ſimilar means allayed; in a few days the bark may be exhibited, notwithſtanding the bile may ſtill appear.

The bile commonly is perceived firſt in the eyes, and from them and the appearances of the tongue, we commonly derive our indications of cure; but it ſometimes appears in the ſkin. When it appears here we may be certain that there are ſome obſtructions to its entrance into the firſt paſſages, either by inflammation, ſpaſm or concretions in the tubes, &c. and in either of theſe caſes the bark is highly improper, in the early ſtages of its appearance. Bark has been diſcovered by my preceptor, Dr. G. Fordyce, to be a very uſeful medicine in the eryſipelas, and alſo in many caſes of an erythematic nature, owing merely to a weak and irritable habit of body, which has been by ſome obſervers taken for true, or (Phlogiſtic) inflammation, yet we can without heſitation aſſert, that it is always improper, and even pernicious in all caſes of inflammation accompanied with rigid fibres, and great inherent ſtrength, and irritation at the ſame time, although active inflammation ſhould not have taken place. When the tongue is tinged with bile, and dry or browniſh coloured, the bark is generally improper, for this indicates a degree of irritation, and fever, not of that nature in which bark is uſeful.

It is to be obſerved, that although a ſlight irritation will cauſe a plentiful flow of the bile into the firſt paſſages; becauſe in this ſtate there is no obſtruction to its getting there; yet a greater degree of irritation cauſing inflammation, will altogether obſtruct its paſſage thereto: by ſhutting up the entrance of the duct into the inteſtine, through the coats of which it paſſes for a conſiderable diſtance, before it enters into the cavity of it, which by being of a muſcular nature, inflames, and becomes tumefied; this appears to be the ſtate of theſe parts in the peſtilential fever, and ſpaſms of the inteſtines are common, but a ſpaſm of the ducts, we believe, rarely ever takes place, as they are not muſcular.

The generation, and nature of biliary calculi, belong more properly to this place than any other, and for this purpoſe the bile would appear more fit to form concretions, than the urine, or indeed than any other fluid of the human body.—It appears that whenever a ſolid ſubſtance, not poſſeſſed of the vital properties, is once formed in any of the cavities of the body; other parts will adhere to, and increaſe it, probably by ſome principle of attraction, which appears to pervade ſimilar ſubſtances in the human body; and it may rather be named ſimilar, than elective attraction, as this latter term is monopolized by chymiſtry, but the ſimilar attractions were noticed by Gliſſon (de Hepate) long before either that of gravity, elective, or electric, were inveſtigated. The teeth being the only ſolid part of our bodies, which are viſible in any of the cavities, we daily perceive concretions formed on them, ſo far as it is not rubbed off by the action of the food, in chewing, or by the lips, &c. this is the tartar of the teeth ſo named. A nucleus, or kernel, may be formed in a cavity, in various ways, as by a ſolid body getting into any of them, either from without, or formed there by the mucus, which ſometimes happens in the urinary bladder from inflammations, or any other cauſe, producing a coagulation of the lymph, which by attracting the ſalts of the urine, ſoon forms a nucleus, which conſtantly increaſes by the ſame means. A biliary concretion is produced probably by coagulated bile, and lymph, ſecreted from the interior coats of the gall bladder, but biliary calculi are common in other animals, particularly horned cattle in the winter, when they feed on dry food, ſuch as hay, &c. and are cured by ſucculent food, &c. as the young graſs in the ſpring.—Gliſſon learned this from the butchers; but biliary concretions are ſo very common in animals, that we cannot always conſider them as neceſſarily cauſing diſeaſe, &c. and ſo long as they remain in the gall bladder, they do not appear to be the cauſe of any uneaſineſs, or even of a diſcolouration of any part of the body, by aberations, or obſtructions of the bile. But as ſoon as any of theſe concretions get into the tube which conveys the bile from the gall-bladder, to the inteſtines, although this duct is capable of great dilation, ſometimes to two or three inches in circumference, yet the paſſage of the bile is often obſtructed in this manner; but Richter mentions a gall ſtone, of which he alſo gives a drawing, which although three inches in circumference, the bile found a paſſage by it into the inteſtines; for their contents were coloured by it. From this we may learn that the biliary duct is very dilatable, but not elaſtic, for when once it is dilated by the paſſage of a gall-ſtone, it commonly retains the ſame width ever after.

It may now appear plain enough, that irritation, and its conſequences will cauſe obſtructions to the natural courſe of the bile, and alſo an increaſed ſecretion of it.—Therefore, on its firſt appearance, bark, or ſtimulants are very improper, for they increaſe the irritation, and the inflammatory diſpoſition; but either of theſe ſtates does not continue long the ſame—for when once the bile is diffuſed through the ſyſtem, it often remains viſible after the cauſe of its appearance is removed; therefore bark, and ſtimulants may be very neceſſary, long before its diſappearance, although not at firſt, as we may often prove in remittent fevers. But as to the production of the (atrabilis) black bile, as it was named by the Ancients, we may diſtinguiſh two varieties of it: Firſt, that which is cauſed by a concentrated bile, where it is both thick, and black, as it aſſumes many varieties of colour, and conſiſtence, even in health—for ſometimes it will be pale, and watery, and at other times very yellow, and of a thicker conſiſtence.

But the appearance of it in the firſt paſſages, from whence it is caſt up by vomiting, or diſcharged by the inteſtines, is often cauſed by ſudden commotions of the mind, or irritation of the part, whereby the bile which was ſtagnant in the gall-bladder, and there inſpiſſated by the abſorption of the thinner part, as always happens whilſt it remains in the gall-bladder; for it is generally thicker after having remained for ſome time, and ſo expelled by any ſudden emotion. But that coffee ground like appearance which takes place in the peſtilential fever, and on ſome other occaſions, appears to be a ſubſtance of a different origin, in the inveſtigation of which we ſhould trace it to its ſource, not by analyſis, but by diſſections. It is very plainly the red globules of the blood changed to this colour by the bile, and juice of the ſtomach, which although its action is increaſed, by irritation appears only capable of ſecreting a fluid, at the moſt; but the matter of the black vomiting is evidently from the liver; for the red particles of the blood, can paſs from the blood-veſſels of the liver, to the biliary tubes, and the liver being ſo very irritable, muſt partake of the affection of the firſt paſſages; and its blood-veſſels are ſo very readily previous to any fluid from the bile ducts, *et vice versa*, from them to it, very readily admit the red particles of the blood into the pores of the biliary ducts, where it gets coloured by the bile of a dark colour, and is ſo diſcharged.

The jaundice is ſo cloſely connected with hepatic affections, that we cannot with propriety paſs it over in this place; for both it, and dropſy, are common conſequences of diſeaſed livers, of which they appear to be only ſymptoms, as we conſider the dyſſentery to be of fevers, when in its worſt form, although it is alſo a concomitant of diſeaſed viſcera. It is not from a deſire to generalize, that we make this remark, but we hope from a more uſeful purpoſe; that is, to trace morbid affections to their natural ſources; for otherwiſe we could have no rational idea of the means of cure, unleſs we conſider it in this light. The ſeat of jaundice is often in the biliary ducts, or their ramifications in the liver; but this diſeaſe ſometimes takes place, without any morbid affection in either. An inſtance of which we diſcovered three years paſt in a young man who led an irregular courſe of life, but of whom we had not the attendance, but diſcovered it by diſſection. The liver, and its appendages, were in a healthy ſtate, although he had an obſtinate jaundice; but the ſpleen was two pounds, nine ounces in weight, and it ſo forcibly preſſed the ſtomach againſt the liver, that it obſtructed the bile, as effectually in its courſe, as though the duct had been tied with a ligature. This perſon's name was Watkins, a recruit in Captain Claibourne's company.

There is a variety of jaundice attacks children, and young perſons, in the latter part of the ſummer, or autumn; particularly after eating any thing which is difficult of digeſtion, as crude fruit, freſh meat, &c. but although it cauſes ſickneſs, and yellowneſs, it is ſeldom obſtinate—it appears to be cauſed by ſympathy with the ſtomach, which communicates its action to the biliary pores, and appears to be nearly related to cholera, for here the ſecretion of bile is much increaſed; although ſeldom attended with a ſpontaneous vomiting, it is generally eaſily cured in a few days by emetics at firſt, in order to diſcharge the offending matter from the ſtomach, after which bitters, chalybeats, &c. ſoon finiſh the cure.

The biliary ducts are often obſtructed without cauſing any other diſeaſe than a jaundice, which is cauſed by the bile being carried with the blood, and diffuſed all over the ſyſtem, and appearing in the ſkin and white of the eyes. Very little of a bilious tinge appearing in the excrements, but much in the urine, which aſſumes a yellow colour, much deeper than common, denoting its abundance in the blood, and its excluſion from the firſt paſſages.

But when the liver is diſeaſed, the bile is ſometimes obſtructed by tumors in its ſubſtance; before it even gets into the large trunk of the biliary ducts, and is ſtopped in the minute pores, from whence it is taken up by the extremities of the great vein and carried to the heart, where it may produce a diſeaſed action, and in the ſkin it produces a pruriency, or prickling. This is one inſtance of a fluid producing a diſeaſed action—and alſo, of an error *loci*, but the ſcurvy affords others; for in both theſe diſeaſes, the healthy nature of the blood is deſtroyed—the coagulable ſymph, and red particles being diſſolved haemorrhages, take place on ſlight occaſions, with a diſinclination to exerciſe, ſleepineſs and weakneſs, of mind and body. We are to remark, that in the ſecreting parts, there are different conformations in the extremities of the arteries, from thoſe of the veins, which theſe parts ſeem deſigned to ſupport in order; but weakened glands cannot prepare their ſecreted fluids the ſame, as the healthy do, and conſequently the ſecreted fluids will be in a different ſtate; and hence diſeaſes enſue. Therefore when the healthy actions of the liver are changed, its ſecreted fluid is no longer good bile, conſequently it cannot perform its function in the formation of healthy chyle, from our food, and in the ſeparation of it from the aliment, and the promotion of the excretions of the inteſtines; for in order to form good chyle, the ſtomach, and the bile, ſhould be in a healthy ſtate: for when acrid fluids flow through the veſſels, they will irritate and increaſe their actions, and obſtruct them by inflammation; or if they remain permeable, their ſecretions will be increaſed; in the firſt of theſe ſituations it appears, are thoſe who labour under the moſt violent degree of the peſtilential fever; here the violence of the irritation, totally obſtructs the exit of the bile, into the firſt paſſages, therefore it muſt be regurgitated into the blood. For even in dead ſubjects, fluids may be injected from the biliary ducts, into the branches of the great vein, by which means it is diffuſed over the ſyſtem. This indicates a violent irritation, when it takes place early in this diſeaſe, and it is generally accompanied with a coſtiveneſs; but a leſs degree of irritation, cauſes a diſcharge of bile into the firſt paſſages, with a lax ſtate, of them or diarrhea, which is a favourable ſymptom in this diſeaſe; and this appears to us the only rational explanation which can be given of theſe appearances, &c.

But the moſt frequent cauſe of jaundice, is by biliary concretions, formed in the gall-bladder; theſe are moſt frequent in the inactive, and indolent, or thoſe who are confined to ſedentary modes of life, they are principally formed of inſpiſſated bile concreted together. Something of a ſimilar nature may be obſerved in the horned cattle, when killed in winter, but very rarely in ſummer, after they have been ſometime fed on new graſs; hence graſs-roots, and infuſions of graſs have been uſed in this diſeaſe, &c. and ſome have eaten the graſs itſelf; and whey has been uſed advantageouſly in the mornings, as a very pleaſant diluent, &c. But a more expeditious method of treating this diſeaſe, is by beginning with nauſeating doſes of emetics, ſo as to vomit two or three times, or what will anſwer as well, to get a ſea ſickneſs, if it is convenient, and afterwards to give gentle laxatives, with diluents, as the neutral ſalts, or caſtor oil, &c. but if it proves obſtinate, the emetics muſt be repeated every three or four days, or once a weak, interpoſing laxatives. But if this courſe does not ſucceed, and there is no fever, or inflammatory diſpoſition preſent, recourſe may then be had to ſtimulant purgatives, with calomel, &c. but the mercurials ſhould rather be given in ſmall and repeated doſes, than in ſuch large quantities, as has often been uſed—one grain is my common doſe, and three my greateſt, once a day or every two days, &c. with ſapo. venet, and ſome active purgative, as aloes, ſcammony or gamboge, &c. when there is an intermittent, or dyſſenteric diſpoſition, emetics are often indiſpenſable; eſpecially where the firſt paſſages are loaded with phlegm, by reaſon of an inactive ſtate of the abſorbents, and in torpid habits, unaccompanied with any inflammation: but where the liver is diſeaſed, vomiting is a dangerous practice, for by the perturbation it cauſes, when there are any morbid irritation about the liver, as often happens in hepatitis; great ſecretions of the bile, with vomiting, often continues a long time, returning on every ſlight expoſure to cold, the treatment comes under the ſucceeding heads.

But it ſometimes happens, that the irritating cauſe is ſituated in the ſtomach, or inteſtines as they are ſubject to inflammation, as in the peſtilential fever &c. and ſometimes when a ſchirrus affects the ſtomach. And we may be convinced that irritations of this part cauſes a vomiting of bile; by what takes place from emetics. There is another ſtate, which is in direct oppoſition to the laſt; this is a deficiency of the ſecretion of bile: on the firſt impreſſion of the ſubject, there appears to be ſomething myſterious in it, but, it is to be obſerved that this ſtate never is the firſt effect of heat, the increaſed ſecretion is always the firſt irregularity; the deficiency is later in taking place, and from following this ſimple hint, we ſhall be able to follow it through all its viciſſitudes, its cauſes, and cures.

It will be evident to any perſon, who has had ſome experience of the effects of warm climates, that heat weakens the whole habit of body, eſpecially where the additional ſtimuli of ſpiritous liquors have been uſed at the ſame time; theſe effects are ſo common, that every perſon, of the leaſt experience, in warm climates, muſt be convinced of the fact; and when weakened, and the patient from experience, adopting a more moderate courſe of life, weakneſs, low ſpiritedneſs, and a deficient ſecretion of bile follows, and in ſome caſes a watery, and inſipid bile is formed in ſmall quantities; and this ſtate is frequently accompanied with a wavering, fearful and irreſolute turn of mind; it is in ſuch affections, that the bath waters, are moſt ſalutary, together with the ſalutary, exerciſe of going to ſuch places, and the amuſements found there; but as this is not within the power of many to procure, they may find a ſubſtitute at home, by artificial imitations of them, by about ten or twelve drops of tincture of iron in ſpirit of ſalt, to a pint of warm water, or by other means. Whey or milk if it agrees with the ſtomach, drank in the mornings, and walking, or riding is uſeful; and ſaponaceous, and ſtimulant purgatives in ſmall and repeated doſes, as venice ſoap, and triturated mercury made into pills, one or two of which may be taken occaſionally.

What at firſt appears more irreconcileable with our principles is, that cold, or moiſture applied to the ſurface of the body, often produces increaſed ſecretions of bile. This appears to be cauſed by the determination of the vital energy; and alſo of the fluids to the internal parts, thereby increaſing the ſecretion to an unuſual quantity. Affections of the mind in delicate perſons, and ſea-ſickneſs, alſo produced increaſed ſecretions of bile, or any uncommon, or unuſual motions, are apt to produce it, probably often by an inſtinctive contraction, which in ſuch circumſtances take place; or from a ſympathy between the membranes of the brain, and thoſe of the liver, between which the conſent of parts is obvious, in the vomiting of bile, which ſo commonly takes place, in caſes of injuries of the brain, &c. for although the liver is, as many other of the moſt irritable parts are, rather inſenſible, even under diſeaſes of its glandular ſubſtance; it nevertheleſs appears to be very irritable, on the application of ſtimuli, either immediately, or by ſympathy.

My readers, it is hoped, will by this time be inclined with me, to believe, that the firſt effects of heat on plethoric habits eſpecially, whoſe vital energy is great; as well as thoſe of other ſtimuli, applied to the ſyſtem, is an increaſed ſecretion of bile; but in this caſe it is obvious that the heat muſt act on it by ſympathy with the ſurface of the body; for the heat of the interior parts is in general no greater in hot, than in cold weather. On the firſt application there is a ſmall increaſe of the interior heat, which is effected in the ſame manner, as by other ſtimuli, or exerciſe. The ſecretion, therefore, always appears to be increaſed by heat, in the firſt place, eſpecially where the common cuſtom of drinking fermented, and ſpirituous liquors, is followed at the ſame time, by increaſing the cauſes, as we may often obſerve, as well on the acceſs of ſummer here, as in warmer climates. It is to be wiſhed that particular attention may be paid to this rationale of the operation of ſtimuli, and vital energy in explaining the phenomena of irritability.

It will now appear obvious, that the beſt method of obviating an increaſed ſecretion of bile, is to avoid the cauſes which are known to increaſe it, as far as in our power; the free uſe of liquors, either fermented or ſpirituous; eſpecially their exceſſive uſe, may be avoided with the greateſt advantage; more eſpecially, on the firſt months, or years, of expoſure to a warm atmoſphere; and this ſingle circumſtance well attended to, will be found a very powerful means of the preſervation of health, where expoſure to heat is unavoidable, eſpecially where the air is pure and dry, where of conſequence, hepatic affections are moſt frequent. But where the air is moiſt, or vitiated with noxious exhalations, the mode recommended, will not be ſo ſucceſsful, eſpecially where intermittents prevail. But in the former, the food ſhould contain much of the vegetable, and leſs of animal ſubſtances—and at the ſame time, what is uſed ſhould be eaſy of digeſtion—preparations of rice, Indian-corn, or wheat appears to anſwer well, and the regular uſe of coffee, or tea, is of material advantage. But when extraordinary ſecretions of bile appear, by vomiting, ſickneſs at the ſtomach, or head-ach, &c. inſtead of following the common cuſtom, of taking emetics, which always excite a perturbation in the parts adjacent, it is more advantageouſly carried off, and the irritation allayed at the ſame time, by taking caſtor oil, or Rochel ſalts, or any other of the neutral ſalts; as all theſe are of a ſedative nature, or what is commonly expreſſed by cooling, or quieſcent; half an ounce of the oil may be dropped into a little water in a tea cup, a dram or two of compound tincture of ſenna will render it leſs nauſeous. Many perſons are partial to the uſe of acids in warm weather, and in tropical countries. They are thoſe however, who are guided more by their preſent appetites, than by experience, or reaſon; for acids however agreeable they may be to the taſte, &c. will eventually hurt the digeſtive powers of the ſtomach, if their uſe is perſiſted in. They appear at firſt to whet the appetite, and like forenoon drams, or bitters, &c. create an artificial inclination for food; but a habitual uſe of them never fails to deſtroy the digeſtive functions, apparently by deſtroying the mucous lining, and the coats of the ſtomach—as Sir J. Hunter, always found it flaccid and weak in dram-drinkers.—As to punch, that noted combination of the two ingredients juſt mentioned, we are ſufficiently warranted, in conſidering it one of the moſt pernicious compoſitions, that ever was in common uſe. In India where the materials of its compoſition are in the greateſt abundance, and perfection, it is never uſed by thoſe who pay attention to the preſervation of their healths—this is the reſult of experience; for in ſuch ſituations, attention to health is an object of much importance—wine never produces theſe deleterious effects ſo conſpicuouſly; it is therefore, preferable in general, to malt liquors, &c. becauſe they are ſeldom to be procured in good order, in warm climates; and from experience we know that when flat, they are hurtful. But as the water is always diſagreeable on board of ſhips, a ſmall quantity of any pure ſpirit with it, may be indulged in at dinner, and towards evening, but this ſhould never be indulged in the mornings. Emetics for carrying off increaſed ſecretions of bile, are not a commendable practice; they irritate and weaken the ſtomach, over much.

Of the Hepatitis.

IN forming a judgment of the diſeaſes to which the liver is liable, we may turn our attention to thoſe parts of the world where theſe affections are moſt prevalent; and alſo to the peculiar ſtructure, and functions of the liver itſelf.

There is no other part of the world, where this diſeaſe is ſo prevalent, as on the coaſt of Coromandel, in India, and in the adjoining country which is very warm—the thermometer is commonly between 90° 0. and 100° 0. The ſurface of the earth is in general covered with a white ſand, and a very thin vegetation, and ſcarce any wood. Madraſs, the Preſidency, is in the 13° 0. of north latitude, this is the region of hepatic affections; but in every other reſpect, when we conſider the comparative warmth of the country, it is a healthy ſituation, ſo that one half of the diſeaſes are of this nature. Theſe affections are peculiarly ſevere on ſailors, or ſoldiers, and indeed few Europeans who reſide any conſiderable time here, eſcape this diſeaſe. Expoſure to the heat of the day, and the abuſe of ſpirituous liquors, and expoſure to the cool night air, after the heat of the day, would appear to be the principal exciting cauſes. It appears to be more dependant on the ſimple heat, or cold of the air than any other diſeaſe, with which we are acquainted.

When we conſider the peculiarities of the liver, we ſhall be more competent to judge of the cauſes of this diſeaſe; here the circulation of the blood is remarkably ſlow, being computed only one twenty-fifth part ſo quick, as in other veins of the ſame diameters; and the hepatic nerves are furniſhed from ganglions, and are probably more irritable, and leſs capable of ſenſation; but theſe properties are common to all the viſcera—but although its glandular ſubſtance is but obtuſely ſenſible, its vaſcular and ligamentous parts are acutely ſenſible when diſeaſed, as in the acute inflammations of theſe parts; conſequently in the acute hepatitis there is great pain, feveriſhneſs, and quick pulſe; although in the chronic affections, there is but little ſenſation of the part, neither does the arterial ſyſtem appear to ſympathize with it, as the pulſe is ſeldom much affected; ſo that it is often far advanced in its progreſs, before it is perceived, and in this ſituation, it may be firſt known by a dead weight of the part, and a numbneſs, externally; this laſt ſenſation is well known to me, having been in this ſtate myſelf, three or four years— but now happily clear of it theſe ſeven years paſt; it is readily perceived on exerciſe, ſuch as the jolting of a carriage, or riding on horſeback, running, leaping, or ſwinging; ſuch experiments uſed gently, may often be neceſſary, in order to determine the real ſeat of the diſeaſe; and when the ſymptoms are obſcure, criterions of this nature may be tried.

Examinations with the hands, may often determine whether this diſeaſe is preſent; eſpecially when the fore part of the liver is the ſeat of the diſeaſe; it may in ſome caſes of this nature be perceived by the phyſician, on application of the hand to the right ſide, a hardneſs, and tumour of the part may be perceived, under the ſhort ribs; or the patient will perceive an uneaſy ſenſation, or pain, more or leſs obtuſe, according to the ſituation of the part affected, and the extent, and nature of the diſeaſe. But when the affection is towards the back part of the liver, or in the upper part, towards the diaphragm, and under the ſhort ribs, it is more difficult to detect, as may be eaſily underſtood by any one who examines theſe parts anatomically; when in this ſituation, it will be neceſſary to examine the patient more ſtrictly, under the clothes, by putting the palm of the left hand on the back, and with the right hand, preſſing inwards with the fingers, under the ſhort ribs. By this means one who has had ſome experience in this way, will commonly be enabled to determine in doubtful caſes, whether there are any morbid reſiſtance between the hands, or the patient will feel an uneaſineſs, when the diſeaſed part is preſſed on; theſe are the moſt certain ways of examination by the touch.

Sometimes it happens that the gall-bladder being full of bile, from ſome obſtruction to its exit, cauſes a tumor to be perceived, on touching it with the hand, but it is ſeldom difficult to diſtinguiſh from that cauſed by the liver, it being circumſcribed, round, and ſeated more towards the pit of the ſtomach, than the liver is. Beſides the means we have mentioned of detecting a diſeaſed liver, there are other ſymptoms which appear ſpontaneouſly; almoſt every perſon has heard of a pain in the top of the right ſhoulder, as a ſymptom of this diſeaſe—this remark is as old as Hippocrates; but although this pain is ſeldom preſent without the diſeaſe, and is therefore an almoſt infallible ſymptom of it; yet the diſeaſe is often preſent without it—and ſo far as our experience goes, oftener ſo than with it. A pain in the back part of the left ſhoulder is, we believe, as frequent in this diſeaſe, as that of the right; and the ſhoulder pained, appears in a great meaſure to correſpond with the part diſeaſed; for when the right ſide of the liver is diſeaſed, the pain is in the right ſhoulder, *et vice versa*, a ſhooting pain, from beneath upwards, under the ſternum, accompanied with a tickling cough, is a frequent ſymptom of hepatitis, eſpecially when the ſuperior part of the liver is affected, and a browniſh color of the ſkin, or, ſometimes inclining to a dead white, eſpecially in old caſes, and in debilitated and delicate conſtitutions, there is commonly an alteration, in the external appearance both of the countenance and the color, different from that of health.

Next to the effects of heat, ſpirituous liquors produce the moſt pernicious conſequences on the liver, and its appendages, we have much reaſon to believe, that they are more active in their deleterious effects, than the warm climates, and all other circumſtances together, for even in the moſt temperate countries, thoſe who make over free with ſpiritous liquors, are very frequently affected in this part, if not with active inflammation, or ſchirrus, as often happens, they become hypochondriac, or dropſical. Theſe ſtates of the liver are more frequent than has been commonly ſuppoſed, but they eſcape detection, by reaſon of the general averſion to the inſpection of diſeaſed bodies after death, which prevails in private practice. The patients are apt to have a jaundiced, or dropſical appearance, and the relatives of the deceaſed, and too often the practitioners, are content, when they can get a name for the diſeaſe; and ſeldom wiſh for any farther inveſtigation of cauſes and effects, by diſſections. Spiritous liquors appear to produce their deleterious effects on the irritable part of the ſyſtem, in a manner ſimilar to thoſe of a warm atmoſphere: for, when they are uſed in large quantities, for a continuance, they ſo far exhauſt the vital energy, as to prepare the way for obſtruction in the liver, ſpleen, &c. even in temperate climates, but much more frequently in warm countries; it muſt however be acknowledged, that there are ſome conſtitutions ſo very happily formed, as to bear the greateſt exceſſes for a long courſe of time; even in countries peculiarly diſpoſed to produce theſe diſeaſes, in others: but their numbers are ſo ſmall, as not to encourage others to follow their example; for even the moſt healthy of theſe, we are ſufficiently perſuaded, would be more healthy, and alſo longer lived, with moderation. The torpid, and phlegmatic, are the moſt apt to bear exceſſes with impunity, in all climates, but eſpecially in warm countries, but the lively and delicate bear exceſſive ſtimulants worſt: but although this may be taken as a general rule, there are many affected, in which we cannot foreſee any exiſting cauſe, why they ſhould be more ſuſceptible of this diſeaſe, than others who eſcape it: but we may from circumſtances, collect this uſeful piece of information, that the action of ſome ſtimuli have generally preceded the diſeaſed ſtate of the liver, whether it is great heat of the atmoſphere, or ſpiritous liquors, or both. But a circumſtance of more difficult inveſtigation is, where abſceſſes of the liver are cauſed by injuries done to the brain, as in fractures or contuſions of the ſcull, here it is very evident, that there muſt be a conſtant ſympathy between theſe parts; but the manner, in which it is propagated, is not to be traced à *priori.* Spiritous liquors taken into the ſtomach ſtimulate it very ſtrongly, and this action is ſoon communicated to the neighbouring parts, either by immediate contiguity, or by ſympathy; for it in a ſhort time affects the brain, long before it could have got there by the circulation, and the mind is affected by it, and the whole nervous ſyſtem: the circulation alſo is very ſoon quickened by it, as we may perceive by the fulneſs, and hardneſs, of the pulſe. When the quantity is moderate, a chearfulneſs, enſues with an increaſe of animation. And the ſtimulus is communicated to the liver in a ſhort time, by means of the biliary duct, and the inteſtine; but the liquor itſelf is probably not totally changed by the action of the ſtomach, until it comes into immediate contact with theſe parts, in its courſe downwards; by which means it will ſtimulate them directly; from whence the ſtimulus is carried along the biliary duct to the liver, whereby large ſecretions of bile are promoted, from whence we may trace the vomiting of bile ſo common after a debauch of wine or ſpirits, &c. inflammations, of glandular parts being very different from thoſe of other parts; beſides the liver has many of the peculiarities of other inflamed glands; for in it the affection appears to be produced by irritation.

This morbid action is often produced by the ſympathy of the liver, with other parts of the body; as there is no other part, where theſe ſympathies ſo frequently take place as here, the frequent inſtances of which, from injuries of the brain, and alſo from irritations of the ſtomach, are convincing proofs; and it is even ſometimes ſuppurated, when the part primarily irritated eſcapes. But it is apparent from other circumſtances, that diſtant impreſſions, ſuch as cold applied to the ſurface of the body, act through the medium of the ſtomach; and alſo the affections of the mind, ſuch as anger, increaſes its ſecretion; and the depreſſing paſſions, leſſen this conſiderably, ſuch as fear, or deſpondency: from all of which we may collect, that the liver is more eaſily affected by ſympathies than any other part of the body, except the ſtomach and inteſtines. And the heart, which is ſo much affected by the mind, that its motion is very ſoon depreſſed or quickened thereby:

from whence we ſee that thoſe parts which are themſelves the moſt irritable, alſo the moſt readily ſympathize with other parts. From the frequency of the heart being affected in this manner, it was ſometimes thought to be the ſeat of the mind. The liver is endowed with a great proportion of irritability; and it was by the anatomical inveſtigation of the functions of this part, that Gliſſon was led to the diſcovery of this principle, ſhortly after the diſcovery of the circulation of the blood, by his aſſociate Harvey. We have reaſon to believe that all irritable parts are alſo very readily affected by ſympathy with other parts; but as both irritation and ſympathy, are performed independent of ſenſation, theſe properties were, until lately, almoſt totally neglected, although an univerſal principal in vegetable, as well as animal life.

Profeſſor Gliſſon was led to the diſcovery of the power of irritability in the liver, from the conſideration, that the blood was diſtributed through it, by a vein named from the place of its entrance into the liver, the venna porta: a tolerable good idea may be formed of it, by the figures of it in Cheſelden's Anatomy, which is in the poſſeſſion of moſt ſtudents. This vein collects the blood from the ſtomach, inteſtines, and all the parts contained in the lower belly, and, from thence, carries it to the liver, through every part of which, it is diſtributed for the ſecretion of bile from it, by the glandular parts of the liver, and from this the blood is returned to the heart by a branch of the great vein. There is alſo a ſmall artery goes to the liver, for the purpoſe of ſupplying its nutriment, which is always afforded from arterial blood: as alſo the ſecretions, this one of the bile alone excepted, which on that account is a ſingular part of the animal economy. This blood returning directly from the firſt paſſages, has been ſuppoſed to carry ſomething ſeptic or alcaline from their contents, and from the abſorbed fat of the meſſentery. This was ſuppoſed to conſtitute the principles of the bile, and to contain ſome of the properties of ſoap; but in order to force the blood forward, through the circulation in other parts, there are a conſiderable arterial force requiſite; but here there could be none, as it is all expended perhaps more completely, than in any other part of the body: by the length and minuteneſs, of the ramifications of the blood-veſſels in the lower belly, which are not equalled in any other part of the body. Gliſſon was firſt led to diſcover another propeling power on this account, and to adopt that of irritability, as an abſorbing, and propeling force, without which, the circulation could not be carried on here, as the force of the abdominal muſcles muſt vaniſh, amongſt the number of minute veins, abſorbents, and other parts contained in that cavity; and both in his anatomy of the liver, and that of the abdomen, he uſes this term, and he is the firſt in whoſe works we find it; for what he denominates rational, or mental anatomy, is what has lately been named phyſiology, or more properly phyſianthropy. But although the fat of the meſſentery is abſorbed in the time of ſickneſs, &c. for an abſorption is certainly going on, from the contents of the inteſtines, conſtantly, as we may prove by the dryneſs which they acquire by remaining there, and alſo by the total abſorption of enemas; yet ſince we have found that abſorption is not performed by the veins, as was formerly ſuppoſed, but by the abſorbent extremities of the lymphaticks, and by them carried to the thoracic duct. We cannot perceive that any of the abſorbed fluid ſhould go to the liver, although the blood conveyed to it is ſomewhat darker coloured than other venous blood, and may therefore contain more of the unaſſimilated elements of the bile; but that the fat, and an alcali are carried thither to form a ſoap, or any thing ſimilar, we are not certain; although from the gall of animals taking the ſtains out of clothes, it would appear to prove ſome ſimilarity of its properties to thoſe of ſoap, although the analyſis does not detect it, &c.

In weakly and phlegmatic habits, and in cholorofis and hypochondrias, the bile was always found of a pale colour, and watery conſiſtency, by Morgagni; but in the robuſt and active, it has been found to be of a concentrated and ſtrong conſiſtence; and in animals which have died of hunger, it has been found to fill the gall bladder, and ſometimes to make its way into the ſtomach, as in vomiting, from emetics or ſea ſickneſs. The bile is apparently forced into the ſtomach by the muſcular action; and when there, it always cauſes an uneaſineſs. Hoffmon and Baglivi thought the bile reſembled the extract of bitter herbs, particularly that of wormwood and centuary, and from this imaginary ſimilarity, has probably ariſen the eſteem theſe vegetables have on ſome occaſions been held in, where there was no deficiency of bile; although ſo ſeldom applied where it is defective. Sir William Fordyce thought that the liver, and the bile was of the firſt conſequence in the animal economy, and that we could learn more from it, than from the pulſe, the tongue, or all the excretions together. It is certainly a very good index of the ſtate of the neighbouring parts; but he thought it was the ſtimulus to all their functions, both healthy, and morbid; and conſequently that its degeneracy was the ſource of almoſt every diſeaſe.

All the interior cavities and tubes of the human body, are defended from the acrimony of their contents, by a membraneous lining, which is furniſhed with organs, either glands or capilaries, which ſecrete a mucuous lining, to defend them from their contents, or from the action of the air; this is the part which the moderns have denominated the mucous membrane; but when this membrane is irritated, whether by getting cold, or by infection, its action is increaſed, as in the interior part of the noſe, and the branches of the windpipe, or in the urethea, from morbid ſtimuli, and in the inteſtines in the dyſſentery: the ſecretion is thereby increaſed, and becomes of a thinner conſiſtence, unfit to defend the parts from the acrimony of their contents. From whence follow pains, with catarrhal, or mucous diſcharges, mixed with their contents, which, together with their increaſed action, invites a greater than ordinary influx of blood to the inflamed ſurface; ſo that one means of irritation increaſes others, as we ſee in dyſſenteries, until the ſuſceptibility is worn off, and the liver always ſhares in the affections of theſe parts; and after the inflammatory ſtate is paſt, a weakneſs remains which is a cauſe of the continuance of the increaſed excretion, in the chronic diſeaſes of theſe parts. This appears to be the ſtate in which they are ; for it appears that chronic weakneſſes of the liver, and conſequent ſtagnation of its fluids, may take place without any preceding ſuppuration, or other inflammation, than that of the mucous membrane ; whereby the energy is diminiſhed, and ſtagnations and obſtructions with an enlargement take place, ſometimes with or without extravaſſation, and putrefaction of the fluids. But ſtagnant fluids have always a tendency to putrefaction : this is the apparent ſtate in which the liver is in caſes of torpid enlargement, &c. For when the hepatic veſſels are in a lax, or paralytic ſtate, the bile will not be ſecreted in large quantities, and the inteſtines will labour under a deficiency of their uſual ſtimuli ; and their motions will be diminiſhed, and coſtiveneſs will enſue, with a weakneſs, and hypochondriac diſpoſition, accompanied with indigeſtion, and crudities in the firſt paſſages. In order to obviate this ſtate, exerciſe in the open air, ſuch as walking or riding, increaſed by degrees, is very advantageous ; ſo as to promote the healthy actions of the ſolids, and conſequently the ſecretion of healthy fluids. This ſtate of the ſyſtem may be illuſtrated, by a ſpecies of inflammation which takes place in the eyes, wherein the veſſels are ſo relaxed, that the red particles of blood enters them, which may at firſt be cured by cold water, but which emolients, or relaxents increaſes, merely by relaxing the veſſels, and by this means inviting more fluids into them.

In the relaxed ſtate of the liver, even the quantity of bile which is ſecreted is of a thin, watery conſiſtence, and will not therefore perform its due functions, and this muſt alſo be a paſſive cauſe of diſeaſes. There are ſufficient reaſons to believe that the ſlow, inſenſible abſceſſes which ſometimes take place in the liver, are produced in a manner ſimilar to this, and that the treatment, by mild ſtimulants, is in ſome meaſure analogous to this. Obſtructions of the liver and ſpleen, are common in many damp, marſhy ſituations, where inflammations, or abſceſſes rarely ever happen : for theſe laſt affections are moſt common in very dry, warm, and otherwiſe heathly places; but obſtructions are very apt to follow the abuſe, or premature uſe of the Bark, or thoſe in whom intermittents are altogether neglected. The abuſe of bark in young and ſtrong perſons, may cauſe ſcirrhus ſwellings, and the neglect of the diſeaſe cauſes weakneſs; whereby the parts are unable to propel their fluids, which therefore ſtagnate. By reaſon of the weakneſs, following the increaſed action, and in the torpid ſtate of the liver, obſtructions and tumour will evidently take place, from the defect of vital energy, in the ſmaller veſſels of the part: but that which follows inflammation, or increaſed action, is conſiderably different from that cauſed originally by a torpor of theſe parts; for theſe affections are ſometimes of a ſchirrous nature, and very obſtinate in yielding to medicines; but the torpid ſwelling is eaſier overcome by gentle ſtimulants, exerciſe and cordial nouriſhments. But a ſcirrhus affection, is more intricate in its nature, and difficult of cure. A mere torpor of the part is an affection of all others the moſt ſimple in its nature, and treatment, for it appears to be only a defect of ſtimuli, or of exertion in proportion to the ſtrength.

A ſcirrhus is, ſo far as we know, always preceded by inflammation; during which the vital energy is much exhauſted in the parts wherein it takes place; by the exceſs of the inflammatory action, after which ſo ſoon as the inflammation is over, the parts are left in a ſtate ſo weak, as not to be able to propel their fluids, which of conſequence ſtagnates. Whilſt ſome abſorption of the thinner fluids are going on, the part becomes hard and commonly inſenſible, the abſorbents appear to be much concerned in this diſeaſe; and it is highly probable that both ſcirrhous and cancer are formed in their trunks, and only affect other parts through the medium of theſe veſſels; for affections of theſe are generally very obſtinate, as we may learn from ſimple wounds of their large trunks being generally ſo difficult of cure; and from their irritation by morbid ſtimuli, being the moſt common cauſes of indurations in thoſe glands, through which they take their courſe, and the obſtinate nature of theſe indurations whether cauſed by ſyphillitic or other infectious ſtimuli, are but too well known to moſt practitioners; and there are no other parts in the compoſition of glands, not even the nerves themſelves, from which we meet ſo much obſtinacy in the cure.

Sudden changes in the weather, but eſpecially, a cold night air, after very hot weather, frequently produce obſtructions, and even extravaſations, and in the robuſt, it may cauſe inflammation, and ſuppuration. Theſe often take place, after violent heats, and when the changes of the air are ſudden, the chill of the cold immediately affects the parts, ſuch as ſitting in a ſtream of air, when very warm, and bythis means cooling ſuddenly, and after the uſe of ſpirituous liquors, theſe affections, are more deleterious. From this we learn the propriety of bringing about all changes ſlowly, for it is the ſuddenneſs of the change, which is the cauſe of the diſeaſe; for much greater extremes of either heat or cold, may be borne without injury, if applied cautiouſly, and neither of the extremes ſuffered too ſoon to follow the other; for cooling ſuddenly, after being heated by exerciſe or otherwiſe, is much more dangerous than the heat itſelf, whilſt it continued. For in general, the greateſt danger to be apprehended from heat, depends on the mode of cooling; for it often cauſes obſtructions, or inflammations in any part; but of all the viſcera, there are none more apt to be affected in this manner than the liver, and ſpleen: and from attention to what has been already ſaid, we may underſtand the mode of action, by which this is produced, thus when heat, liquors, or other ſtimuli are uſed, they cauſe violent action of the parts, which muſt exhauſt their ſtrength, and if theſe ſtimuli are ſuddenly diſcontinued, before the parts recover their energy, ſtagnations enſue.

As the difference in the cauſes and nature of hepatic diſeaſes are various, ſo alſo are their phyſical natures; thoſe obſtructions which ſucceed autumnal fevers, which ſo frequently cauſe dropſical and jaundiced appearances, are extremely different from thoſe acute inflammations, which follow expoſure to great heats in the day time, with the additional ſtimulus of ſpiritous liquors, ſucceeded by expoſure to a cold night air or to rain—the firſt will readily be underſtood to be of a torpid nature, not cauſing much uneaſineſs, nor ſwelling, and more readily perceived by its effects, than by any immediate appearances of the parts originally affected: unleſs by a ſenſation of weight, eſpecially from the jolting motion of a carriage, running, or leaping, or by a numbneſs towards morning, after lying on the right ſide in the night; but the dull appearance of the eyes, the ſwelling, and pitting of the ancles towards evening, if the patient keeps up in the day, indicates it plainly in theſe diſtant parts, but this ſtate of the diſeaſe, is ſeldom obſtinate. It is but in few caſes of the moſt accute inflammations, in which the pain is very great, but commonly the more rapid it is in its progreſs, the more ſenſible it is apt to be perceived, and accompanied with pain; in ſome inſtances we have ſeen it ſo acute, as to deprive the patient of reſt, day and night, and the pain ſo great as to prevent their lying down, cauſing a ſymptomatic fever. One caſe of this nature was fatal in nine days, but it was the moſt acute we have ever ſeen or heard of: it happened in a plethoric young man, who was our captain's cook, and had never been in any warm climate before that voyage.

Affections of the liver are in ſome caſes ſo obſcure, as to be extremely difficult to diſcover; theſe are the chronic caſes which make their attack, and advance very ſlowly, and almoſt imperceptibly; cauſing very little uneaſineſs at firſt, and are moſt frequently diſcovered in the courſe of time, by ſome ſecondary conſequences, ſuch as pain in the back part, commonly of the right, but ſometimes it is in the left ſhoulder; here the cauſe of the ſympathy, although long obſerved, is very difficult to be traced, for we know of no ſimilarity of ſtructure, nor nervous communication between the parts; nor is there any continuity of membraneous ſubſtances; but theſe ſymptoms are not always preſent in this diſeaſe; the tickling cough, and ſhooting pains up the breaſt, are more eaſily traced from the ligamentous, or membraneous connexion of the liver, with the diaphragm, (or midriff) and its connexion with the pleura, and mediaſtinum.

In many caſes of diſeaſed liver, the affection cannot be diſcovered by any external appearance of bile: in ſome chronic caſes of long ſtanding, the patients are even whiter than common, but the appearance of the whiteneſs is different from that of health, it is rather a dead white, accompanied with a dullneſs of the eyes; the vivid ſprightlineſs of which, ſo characteriſtic of health, and animation, and the ruddy colour of the ſkin, being deſtroyed by the diſeaſe— neither are there an appearance of bile, either in faeces, or urine; here it is probable that the ſecretion is not performed: this ſtate is moſt common to thoſe who have laboured long under the diſeaſe, and are weakened by it. Thoſe who are in this ſtate, have little or no appetite for food, are frequently feveriſh, eſpecially in the evenings, and are often harraſſed with lowneſs of ſpirits, rather inclining to melancholy, they are readily affected by every ſlight impreſſion, and even their imaginations often affect them more than real phyſical cauſes would in health.

The obſtructions it is moſt probable, take place in the ſmall branches of the porta, which carries the blood to the liver, from the other parts of the lower belly, as the reſiſtance to its action muſt be far the greateſt, in proportion to the impelling power with which it is endowed, of any veſſel in the body. But it would appear moſt probable, that although chronic obſtructions, are owing to this cauſe; this vein performing the offices of an artery, propeling the blood through the glandulous part of the liver, from which the ſecretion is made; for we have great reaſon to believe that the artery, of the liver, which ſupplies its ſubſtance with nouriſhment from the blood, is from its ſmallneſs, not adapted to ſupply the ſecretion of bile, which in a healthy ſtate is a large quantity. This artery is certainly active in the acute inflammations of this part; for like other acute inflammations, a pulſation or throbbing may be perceived by the patient. From the acuteneſs of the pain we are certain that the nerves are affected, and moſt probably the artery; on conſideration that this ſtate of the diſeaſe, is very ſimilar, both in its ſymptoms, and treatment, to other caſes of glandular inflammations. We have no doubt that it may partake of a phlogiſtic, or of an eryſipellatous nature; but we believe that they vary conſiderably in different habits of body—in the young, ſtrong, and full bodied, we believe it often inclines to true, and in the weak to an eryſipellatous nature, the parts being vaſcular.

Of the Varieties of Diseases of the Liver.

IT may now be perceived that there are two diſtinct varieties of hepatic diſeaſes; very different both in their natures and treatments, and unleſs we keep this diviſion in view, together with that of many intermediate ſhades between them, our ideas of the nature of the affections of the liver, and of the modes of treatment, muſt be confuſed and erroneous.

Of the nature of the affection, we may form a judgment from the modes of the attack, and the preſent ſymptoms; but in this diſeaſe the acute ſtate, does not always neceſſarily procede the chronic. For this laſt variety of the diſeaſe often begins, and goes on in a gradual, and often an inperceptible manner; and is at length diſcovered by ſome ſecondary affection, ſuch as a tumefaction of the feet, a dullneſs of the eyes, a pain in the back part of either ſhoulder, or ſometimes a ſhooting pain up the breaſt, a tickling cough, and a dull weight in the hypochondrium ſeldom accompanied with pain, although often with oppreſſion, or a languiſhing ſenſation, with a melancholy turn of mind, or hypochondriac diſpoſition. From this it is very evident, that there are ſome conſiderable differences in the diſeaſe, when preceded by inflammation, and when it is not; for when inflammation has preceded, there may be either a ſmall quantity of matter formed, or a ſcirrhous ſwelling, or a hardneſs may remain a long time, without cauſing much uneaſineſs, and may be carried off by moderate living, excerciſe in the open air, cheerful company: and pills occaſionally, with agreeable amuſements, are remarkably ſalutary.

When the ſuperior and convex part of the liver, about the ſuſpenſory ligaments is affected, the pain is commonly very acute, for although ligaments, and membranes are inſenſible when in health, they are acutely ſenſible in a diſeaſed ſtate; this variety of the diſeaſe is moſt apt to attack the ſtrong and plethoric, and in them it is accompanied with all the appearances of a truly inflammatory diſpoſition, and here blood-letting, the neutral ſalts, and diluents, are requiſite: this ſtate is moſt apt to take place in the natives of temperate climates when they remove to warm countries, particularly in thoſe who uſe ſpiritous liquors freely, and expoſe themſelves to the heat of the weather, or uſe ſtrong exerciſe; and cool themſelves ſuddenly, by cold drinks, or expoſure by ſitting in the cool air, in the ſhade, or at night; all of which are dangerous in many reſpects. But while walking, cold air is not hurtful, but cooling ſuddenly after being very warm, is a dangerous proceſs in any climate, but doubly ſo under theſe circumſtances.

The oppoſite appearance of this diſeaſe, which takes place ſlowly in melancholy and weak conſtitutions, after being much expoſed to a warm atmoſphere, is properly named the chronic hepatitis, in this ſtate it is not uncommon for the ſubſtance of the liver to become ſcirrhous—patients in this ſtate are frequently Hypochondriac, and as the ſecretion of bile is deficient, they are always in a coſtive habit. A ſedentary life, with much anxiety of mind, appears often to be an occaſion of this variety of the diſeaſe; but a ſtate ſimilar to this often occurs, without any very obſtinate diſeaſe of the liver, merely from confinement, and anxiety; but this affection may be relieved by exerciſe in the open air; country living, cheerful company, and amuſement; thoſe who have been uſed to a country life, exerciſe, and air, on being confined to buſineſs in large towns, commonly fall into this ſtate, in any climate; and may be recovered, by indulgence in their former modes of life occaſionally; being obliged to take journies or voyages on buſineſs, anſwers peculiarly well, in this ſituation; and ſtimulant ſaponaceous; but gentle laxatives once or twice a week, with an infuſion of columbo-root, but an habitual uſe of them is to be avoided; therefore, they ſhould not be uſed oftener than neceſſity indicates.

Chloroſis in young females, is nearly allied to theſe affections, for in them, as well as in the hypochondriac, we may find by Morgan's diſſections, there was always a deficiency of bile, and it was pale coloured and watery. And the ſame obſervation has been made by others, particularly by Kirkland, who found the liver of a very ſmall ſize, and pale coloured, in a hypochondriac patient, and it was found in the ſame ſtate in all weak and delicate perſons. Where the colour is pale, or a dead white, there appears to be a deficiency of the vital energy in this viſous.

All caſes of acute, or rapid diſeaſes of the liver, are not neceſſarily attended with great pain: for they are often rapid in their progreſs, and ſuppuration far advanced, before they cauſe much alarm; and in other caſes, where the progreſs is not much more rapid, the pain will be extremely acute. Much depends on the ſeat of the inflammation, whether it is in the parenchymatous ſubſtance of the liver, or near its vaſcular or nervous parts; for the more rapid it is in its progreſs, the more readily it cauſes pain. But from the ſymptoms already taken notice of, as they are to be met with in practice, and other phenomena which ſhall be taken notice of hereafter—we ſhall endeavour to render the phyſical ſtate, and nature of the diſeaſe, as intelligible as language is capable of; but we muſt not forget that language comes far ſhort of all our mental ſtores, &c.

The apparent cauſe of the greateſt pain in this diſeaſe is to be found in the ſeat of the affection. When the vicinity of the ſuſpenſory ligament is the ſeat of the diſeaſe, the pain is commonly moſt acute, and when the extreme parts of either of the lobes are affected, the pain appears to be the leaſt; and ſo in proportion to its diſtance from the large veſſels, and nerves, the capſule of

Gliſſon, ſo named from his diſcovery of it, which envelopes the veſſels, we have every reaſon to believe is very ſenſible when diſeaſed; and it is probable from analogy that it is only in the diſeaſed ſtate, that either the ligaments, veſſels, or membranes, are endowed with ſenſibility. For this is the caſe with the ligaments, and membranes and many other parts in the body, they are only ſenſible when morbidly affected. This is the manner in which the diſputes, aroſe with Haller, who denied, as he was authoriſed by his experiments, that either tendons, ligaments, or membranes, were ſenſible. Whereas it had been often found by others, that in the diſeaſed ſtate, they were extremely ſenſible, but it is a circumſtance univerſally experienced, in the practice of the healing art, that the ſuſceptibility of ſenſation and irritation, is increaſed by diſeaſes.

But the ſubſtance of the liver, as well as that of the lungs, is capable of two varieties of obſtruction and ſuppuration, that is when either one or more large impoſtumes, formed in different parts of their ſubſtance; or to innumerable ſmall grains, of the ſize of pepper corns or large grains of ſhot, named tubercles, each containing a ſmall quantity of puſs; both of theſe we have ſeen repeatedly on diſſection, both in the liver and lungs, the pain appears to be much increaſed by the reſiſtance to its enlargement, which it meets with in the inflamed part; hence the great pain of whitloes and other parts confined by ligaments. The ſeat of the inflammation when near the ſuſpenſory ligaments of the liver, we have found, on diſſection, in ſome of the moſt violent caſes we have ever met with. But the formation of tubercles is commonly attended with little or no pain of the part, or theſe ſymptomatic pains of the ſhoulders, or breaſt, which we have ſeen ſo commonly in other caſes of hepatitis. But with a jaundiced appearance very obſtinate, ſometimes reſiſting all medical treatment, accompanied with a hectic heat; a quick and ſmall pulſe, with great thirſt and feveriſhneſs, but the hectic pulſe and fever, is common in caſes of abſceſſes here, the jaundiced appearance is not ſo common, although it often happens, &c.

Theſe affections of the liver, brought on by the depreſſing paſſions of the mind, as by grief, and deſpondency, are rather of the chronic, than of the acute ſpecies; this affection takes its name of melancholy from the appearance of the bile, which in this ſtate is generally of a dark colour. The Ancient Grecians thought the bile here, was the cauſe of the diſeaſe but although that doctrine has loſt its force: yet we may collect many uſeful indications from its appearance; and in this light, it is ſtill an object of conſiderable importance. The circulation in the liver becoming languid by grief, and other depreſſing paſſions, and the porta wanting the aſſiſtance of arterial force to perform its very laborious functions; and its energy depreſſed by the paſſions themſelves, and the blood accumulated in the branches of the porta, cauſes a painful and obtuſe ſenſe of oppreſſion, anxiety, or deſpair—and very often compleat mental derangement. And although it may not often be ſuſpected, yet it is a certain fact, that the liver is far more frequently the ſeat of mania, and of melancholy, than the brain. For although this part may, in ſome caſes be primarily affected; yet we believe it is extremely ſeldom ſo—theſe ſlight alterations which have been found in the brains of maniacs, on diſſection, by Morgagni, and others; ſuch as a dryneſs, and hardneſs of the ſubſtance of the brain, are as probably the conſequences, as cauſes of theſe affections—but the oppreſſion in the hypochondria, the langour, and anxiety, &c. and the methods of cure, which are moſt ſucceſsful, points out the liver to be the ſeat of the diſeaſe.

The treatment of the acute Hepatitis or Inflamed Liver.

THIS affection, being ſo various in its nature, and in the manner of its production, muſt often require very different modes of treatment; but as the acute ſtate of the diſeaſe, requires ſpeedy aſſiſtance, we ſhall begin with it; and proceed to the Chronic. Here we are to conſider that it is an inflamed gland we have to treat, and one whoſe ſenſations, and functions are very obſcure. In this ſtate of the diſeaſe we have ſeen the fatal effects, of an empyrical practice in its moſt glaring colors, and of thoſe extravagancies which a random practice often introduces, not only in the preſent affection, but in many ſimilar inſtances. The moſt ſimple diſeaſes, of the leaſt complex glands, are generally very obſtinate of cure; but it is probable there are none more ſo, than that under conſideration; but this is no apology for treating it in an empyrical and irrational manner, whether the diſeaſe is only in its incipient ſtages, or of long ſtanding. It is a misfortune but over common with a certain claſs of medical practitioners, when they find out, or even hear of a remedy, or mode of treatment uſeful in any diſeaſe, to apply it to all ſtages and varieties of affections which bear the ſame names, ſetting both ſcience and reaſon at defiance. The fatal effects of ſuch proceeding have been but two often experienced in the preſent affection. In the acute hepatitis, every thing is to be avoided which has any tendency to produce irritation, or to increaſe the inflammation, conſequently all ſtimulants, of whatever nature they are, muſt be avoided; and on the contrary, every circumſtance of regimen, and medicines which are of a ſedative, or cooling nature, are to be had recourſe to, and perſevered in ſo long as this ſtage continues. Here bloodletting, and neutral ſalts, or caſtor oil, and antimonials will come into uſe, in the firſt ſtage of the diſeaſe. Where the pulſe is full and hard, bloodletting ſhould be practiſed at the beginning; but here we ſhall obſerve that it is only thoſe who are in the habit of paying ſtrict attention to the pulſe, who can determine the neceſſity of this operation, in any caſe. It may on ſome occaſions be neceſſary to repeat it three or four times: and in order to carry off any ſtimulant matters, which may be lodge in the firſt paſſages, rochel, or common ſalts, or caſtor oil, may be given every ſecond day, and at night a moderate doſe, as about fifteen or twenty drops of antimonial wine, or four or five grains of antimonial powder, drinking ſome warm diluent fluid, at the ſame time, in order to promote a perſpiration. This courſe may be perſiſted in for ſome days, provided the patient be young, and ſtrong, and his external appearance ſhews ſigns of an inflammatory diſpoſition, ſuch as a fluſhed, reddiſh or puffed up countenance, a pain, or ſenſe of ſtraitneſs in the orbits of the eyes, &c. and by purſuing theſe ſteps in the early ſtages of the diſeaſe, we may prevent the formation of matter, and this is an object of the greateſt magnitude which we can attend to at this time.

The internal uſe of nitre in doſes of twenty or thirty grains has been in high repute here, as well as in inflammations of the lungs: it may be given in ſyrup, or molaſſes, and by its property of leſſening vaſcular action, we are inclined to believe it is very uſeful, in all caſes where we would wiſh to prevent the formation of matter.

The exhibition of antimonial medicines, ſhould be cautiouſly managed, leſt they promote a vomiting; a circumſtance which we ſhould generally wiſh to avoid, in acute diſeaſes of the liver, on account of the compreſſion, and concuſſion which the operation produces.

Indulging in reſt, particularly in bed, and endeavouring to ſupport a moiſture of the ſkin, by warm bathing of the lower extremities, and ſmall doſes, ſuch as three or four grains of the antimonial powder, will anſwer well to be taken at night, avoiding ſudden cold, or any agitation either of mind, or body, for either may be a means of cauſing rigors, and ſtrictures of the ſkin, which are both attendants, and cauſes of ſuppuration. A true phlogiſtic inflammation of the liver; was ſaid by ſome men great in medical ſcience to be a very rare occurrence, but we have much reaſon to think otherwiſe, for if the formation of matter can be taken for a teſt of phlegmon, it may be found here very often.

Ideas of malignity, and obſcurity in this diſeaſe being removed, as far in our power, it will appear that when we make allowance for the complication, of the organ affected, which is one of the moſt complicated, and irritable glands in the human body: conſequently its diſeaſes muſt alſo be complex, and often more obſtinate than thoſe of other parts; ſo that perſeverance and patience here are both requiſite. But the plan we have pointed out, muſt be purſued, with occaſional variations whilſt the acute ſtate continues. But as there are great varieties in the degrees of acuteneſs, ſo there muſt be in the modes of treatment; for although matter is often formed in great quantities, in acute inflammations of this part: yet they appear often to partake of an eryſipelatous nature, eſpecially if we were to judge by the length of time it continues: as phlegmon in the opinion of ſome eminent phyſicians, never continues ſo long, Dr. Fordyce limits it to three days in general. It will readily be underſtood that when the diſeaſe is of an eryſipelatous nature, there will be more of an erythematic diſpoſition, a quicker and ſmaller pulſe; for here the membranous parts are more affected, than in true inflammation, and the treatment muſt be ſuited to it: but this will be better underſtood, from what is already ſaid, on eryſipelas, this being generally an affection of the membranes it is more tedious of cure, and in weakly, and aged perſons, it may in its latter ſtages, require a nouriſhing, cordial regimen, together with opiates, and the Peruvian bark, after the firſt irritation is removed.

It may be thought by ſome of our readers, that we are unacquainted with the uſe of mercurials in this diſeaſe, but it has happened, that we are but too well acquainted with their effects in acute hepatitis. Mercurials were about twenty years paſt, in their meridian fame in thoſe parts of India, where this diſeaſe is moſt prevalent, and from ſome late publications, they appear to be ſo yet, with ſome practitioners there. But we hope, from our acquaintance with their pernicious effects, that they are not ſo with them all; for many of them, we are very certain, have minds formed ſo as to profit by experience.

It is within the laſt fifty years, that the uſe of mercurials were firſt diſcovered in India, for the diſeaſes of the liver. But it happened unfortunately, that the diſcoverers recommended it indiſcriminately, in all hepatic affections; and they were as indiſcriminately followed by others, who were happy to learn an eaſy, and expeditious mode of cure, for a very obſtinate diſeaſe; this has been the caſe with moſt diſcoveries in medicine. But this mode of practice, was for ſome time in partial uſe in India, before it was publiſhed in Europe. But as ſoon as it was made known there, it muſt of courſe ſhare the ſame fate with moſt other diſcoveries, of being over rated at firſt— Therefore young practitioners going to India, ſtrangers to the climate and to its diſeaſes, a general mode of cure, which appeared to ſupercede the neceſſity of thought, in a climate where every thing conſpires to produce indolence and luxury. Therefore this mode of practice ſoon became general, both on land, and at ſea; for in this employ there are none of thoſe mean jealouſies, ſo pernicious to ſcience in other parts. But this freedom of obſervation is not intended to hurt the feelings of any one individual; we have fallen into the ſame error, and it is from experience of its pernicious effects, that we have ſeen the neceſſity of learning from fatal experience, the propriety of departing from the beaten path—and we are happy, that for about fourteen years we have followed, and recommended a more ſucceſsful mode of practice in India—and alſo in America, where this diſeaſe is alſo much more frequent, than it was formerly ſuſpected to be. For it was formerly the cuſtom in moſt countries where this diſeaſe appeared; as it often does in Europe, as well as in other parts of the world, to refer it to that claſs of diſeaſes which its external appearance moſt reſembled. Hence when a yellowneſs appeared in the eyes, it was called a jaundice; and when the appearance of dropſical ſwellings took place, it was denominated a dropſy; and theſe being names long ſanctioned by authority, often ſatisfied the phyſicians, as well as the patients, and their connexions; eſpecially thoſe who have an averſion to diſſections. And when perſons were low ſpirited, hypochondriac, or melancholy, as they frequently are, when the liver is diſeaſed; it was ſuppoſed to be a diſeaſe of the mind; and conſequently the brain, and nerves were ſuppoſed, to be the chief ſeat of the mental derangement, although this is very ſeldom the caſe, if we will put any faith in Morgagni diſſections; and pay any attention to the modes of treatment which moſt commonly ſucceed in theſe caſes, and their appearances after death. But the abuſes of mercury in caſes of acute hepatitis, or in any ſtage of it when attended with acute pain, we know to be the moſt pernicious mode of treatment, which it is poſſible to invent: for it will ſcarce ever fail of promoting the formation of matter; the great object which we ſhould wiſh to avoid. For if the formation of matter can be avoided, we may confidently hope for a cure; but when an abſceſs, or even tubercles are compleatly formed, a complete cure is very doubtful; although even in this caſe, we are not by any means to deſpair of a cure, and if not a compleat, at leaſt a partial one.—The confounding of acute, with chronic; and of phlegmonic, with eryſipellatous inflammations, have been the cauſe of much unſucceſsful practice in medicine; and perhaps in no one part of it, more than in the diſeaſes of the liver. This ſubject is of a nature ſo important, as to merit the moſt ſerious attention of every phyſician—but more particularly of thoſe who practice in warm climates. But the efficacy of mercury being diſcovered in chronic diſeaſes of the liver, and it being indiſcriminately recommended, it ſoon got into general uſe, in both ſtates—from its advantages in the chronic. And the acute were ſet down as incurable, when the patients died, as they generally did under this treatment—my firſt India voyage afforded many inſtances of this. But the miſchief did not end here, for its application was transferred to, and recommended in other inflammations; and as it was on ſome occaſions uſeful, or perhaps only harmleſs in erythematic inflammations—it was alſo applied in the true phlogiſtic caſes of inflammation.

But it happened to us in the early part of our practice, whilſt mercury was conſidered a ſpecific, in all the ſtages and varieties of the diſeaſe, there were ſeldom much time loſt, until it was had recourſe to it; although even then, bleeding and a doſe or two of ſalts were common—but this was a courſe of preparation much too ſhort, for a very obſtinate diſeaſe; for the inflammation is often ſo very tedious, as to continue for weeks together, not much diminiſhed—moſt probably this is by communicating from one part of the liver to another: as it ſometimes happens to other glands, that the inflammation often continues long in its full force; but we can ſafely pronounce mercury to be highly pernicious, in the firſt ſtages of the diſeaſe, whilſt the pain, or true inflammation is preſent—for tubercles, or impoſtumes are ſo apt to follow, that it is ſcarce poſſible to avoid them; a circumſtance which ſhould be dreaded, above all others. Theſe are the effects which we have ſeen invariably take place from the abuſe of mercury, in the early ſtages of the diſeaſe; ſo that we are not more certainly convinced of the poiſonous effects of arſenic, than thoſe of mercurials, given in the acute ſtages of this diſeaſe. Were we to collect caſes in proof of this doctrine, we could multiply them to a very great extent, on both ſides of the Atlantic: and even where this diſeaſe, until lately, was not ſuppoſed often to happen; as well as in India, where it is very common, from the heat of the weather, the abuſe of ſtrong liquors, and the coolneſs to which ſtrangers commonly expoſe themſelves in the night air, after the great heats of the day. But one or two caſes may be neceſſary in order to exemplify our mode of treatment.

The following is the caſe of a young man never in any warm climate before, he was remarkably plethoric, aged about 25; it is remarkable that although this caſe was as acute perhaps, as ever was obſerved, and alſo as painful, yet the pain was not increaſed by preſſure, which might have been owing to its being rather under the ſhort ribs—at firſt it appeared as much like a dyſſentery as a hepatitis.

The caſe of John Frodſham, captain's cook, of the Royal Charlotte, when lying in the Baſon at Rat Iſland, off Bencoolen, in Sumatra, in November 1784. We may obſerve that it was poſſible the prediſpoſing cauſe of this diſeaſe, was contracted at Madraſs, from which we had ſailed the 8th of the preceding month. For when on ſhore there, he had a diarrhea, which was eaſily cured; the weather during the interval was cloudy and rainy, with frequent ſtorms, and when the ſun appeared through the clouds, it was exceſſive warm. He was attacked on the 15th with a ſevere pain in the right hypochondrium, with purging, and a griping pain of his bowels, head-ach, and giddineſs, with a quick, but ſmall pulſe, for which he had an antimonial every four hours, with Barley water, for his common drink—16th, the ſymptoms were all worſe; the antimonial vomited him; he had a doſe of ſalts, and a calomel pill at night—17th, he complained of acute pain under the breaſt bone, on a full inſpiration; pulſe full and quick, near a pound of blood was taken from his arm; and a ſmall anodyne, in order to alleviate the pain at night—18th, the ſame, he reſted in the night, and continued the medicine—19th, feveriſh with a ſick ſtomach; he continued the ſame medicines until the 20th, when he complained of great pain, in the region of the liver, with difficulty of breathing—the bleeding was repeated, and a bliſter was applied over the part; the medicines were continued until the 24th, when he was removed on ſhore, where he died on the 9th of December, the pain continuing violent, although ſeveral cooling ſedatives were tried. On opening the body, the right lobe of the liver was found much enlarged, and adhered to the ſide, and when cut into, about two pounds of matter ſtarted out; the gall bladder was full of bile, and no other morbid appearances were obſerved.

Since this work went to the preſs, a caſe of hepatitis more acute than common has occurred to us in a gentleman, aged about 40 years, who leads a ſedentary life. During the ſudden cold weather towards the end of September, he ſuppoſed he muſt have been hurt by writing in an office without a fire, and early in October, he was taken with a ſlight remittent fever, in which he turned yellow about the third day, but he was ſcarcely confined to bed by it, the ſeventh day: he was ſo far recovered by the proper remedies, as to begin to take bark, of which we believe he took more than was neceſſary. He was one week clear of the fever, when taken with a pain which he deſcribed to have begun in the lower part of his bowels, and ſettled in his ſtomach, which was eaſily relieved. Next evening the pain returned with greater violence, and at going to reſt he had an anodyne which gave no relief, and being called up at two in the morning, before my arrival with the patient, he had vomited. And ſtill complaining of the pain in his ſtomach, on which a gentle emetic was exhibited, as we ſuppoſed there was ſomething noxious in his ſtomach, this operated three times without any relief. On which ſuſpecting he had miſtaken the ſeat of the pain, on applying my hand to the pit of the ſtomach, he complained of a violent pain on touching the right ſide of it, which was ſuppoſed to be over the gall-bladder, and there the pain was now concentrated. A biliary concretion was now ſuſpected to be paſſing the duct, and the pain was ſo violent, that a ſmall anodyne was given, which together with the former fatigue procured him ſome reſt: and next morning, being the third, he had an ounce of caſtor oil, the pain appeared to move round the right ſide under the ſhort ribs, the real nature of the diſeaſe was now ſoon diſcovered; he was bled, and took warm diluting drinks, and ſmall doſes of antimonial powder, and on the fourth day of the diſeaſe, about twenty-ounces of blood was taken from him, and he went on with the diluents and antimonials, and a bliſter was applied to the part—on the fifth he was the ſame; this day Dr. Wiſtar was conſulted—he was perfectly convinced of the nature of the diſeaſe, and of the propriety of the treatment. Every ſecond day he required an ounce of Rochel ſalts, or caſtor oil, to preſerve his bowels open, with pills compoſed of venice ſoap and the gum pills, in each of which there were a third of a grain of tartarized antimony, two a day, he was now bled a third time and went on in the antiphlogiſtic plan. And the ſeventh he was again bled, the pain and quickneſs of pulſe ſtill the ſame, with ſome ſmall variations, the blood which before this was dark coloured, was now very thin, or watery ; the eighth day the pain was a little abated, and he had pills compoſed of the triturated mercury and ſoap, of each two grains, with the tarturiſed antimony—the eighth he had one, the ninth two, the tenth three, and the eleventh four ; two of them kept his bowels open, but three or four purged him, and the matter evacuated, had every appearance of puſs, which gave us hopes that it was paſſing off by the biliary ducts, and this we believe was the caſe. For he had no more accute pain, but the lax continued three or four days with a griping, during which the antimonial was omitted in the pills; of which he only took two each day, he recovered gradually, and on the fifteenth was able to ſit up. He had an infuſion of columbo root on the thirteenth, as he was very much reduced, two drams to a pint of water, to reſtore his appetite ; of this he took one half in the morning, the other at noon, with the pills until he was tolerably well reſtored to his appetite—the violence of the pain was ſuch that he could not move in bed, he was obliged to lie conſtantly on his back ; but it was leſs violent when he inclined to the right ſide than to the left. Although he felt a ſevere pain from preſſure on the part ; there was no hardneſs to be perceived, and he is at this time in a tolerable good ſtate of health, but ſtill rather weak—it is now twenty five days ſince the beginning of the diſeaſe, and ten ſince his being able to ſit up. Dr. Wiſtar who attended daily for a weak, can bear witneſs to the ſeverity of the diſeaſe, and the method of treatment which was purſued, as he knew it all from the beginning to the end.

The Treatment of Chronic Hepatitis.

IF the diſeaſe comes on ſlowly, or when a hardneſs or other appearances of chronic obſtructions remain, after the acute ſtage of the diſeaſe is over, then we may conſider the affection to be more of a chronic nature than in the preceding ſtate, and the mode of treatment muſt be regulated accordingly.

This ſtate is ſometimes diſcovered by a pain in the back part of the right or left ſhoulder, and ſometimes a pain extending up the breaſt, accompanied with a tickling cough. On applying a hand to the part, rather under than below the ſhort ribs, a tumour may ſometimes be perceived by the hand; but more commonly it may be diſcovered by a pain felt by the patient on preſſure; when inſtead of one or more large tumours, there are tubercles, diſſeminated through the ſubſtance of the liver; they cannot be felt by the hand through ſuch deep coverings. When the fore part of the liver is indurated, or ſwelled, it may be perceived; but when the back part is affected, it is ſcarcely to be felt by the hand. The wax-like hue of the ſkin, or defect of the ruddy colour, and lively appearance of the eyes, when they aſſume an inanimate appearance, and the dead white of the ſkin, often with yellowiſh or browniſh tinge, are ſtrong indications of this diſeaſe. Sudden motion, as leaping, running, or riding, may diſcover it when it is very obſcure, but in the acute ſtages, they are not practicable; although we believe they ſeldom cauſe the abſceſs to burſt, which is mentioned by Morgagni.

Here ſtimulant purgatives may be more uſeful, pills compoſed of mercurials and Venice ſoap, with ſome other active cathartics, as ſcammony, gamboge, &c. may be taken occaſionally, before going to reſt: theſe pills keep the bowels open, and by adding a third or fourth of a grain of emetic tartar to each, they promote a perſpiration in the night. They alſo give a little ſtimulus to the abſorbents, when they are in a torpid ſtate; at the ſame time an infuſion of columbo may be uſed early in the morning, and an hour or two before dinner, in order to promote the digeſtion, which in this ſituation is very apt to be languid, and weak. Any other bitters which may be reliſhed by the patient, provided they do not cauſe coſtiveneſs, may be uſed. The juice of dandelion if convenient, may be had recourſe to occaſionally; and alſo the expreſſed juices or decoctions of other gently ſtimulant vegetables. Water creſſes are alſo accounted uſeful; and other acaleſcent, or pungent vegetables uſed, as ſalads. The food ſhould be eaſy of digeſtion, ſuch as veal, lamb, or freſh beef, or fowl. Pork, eſpecially if ſalt, or ham, ſhould be refrained from, as they are difficult of digeſtion. This courſe may be perſiſted in for two or three weeks, and then either left off for a week, or changed in caſe no advantage appears to be gained by it: the ſame or a courſe ſomewhat ſimilar, may be again had recourſe to, inſtead of the aloes, which is itſelf, if not combined with the ſoap and tartar emetic, apt to cauſe a coſtiveneſs; two grains of ſcammony, or gamboge may be ſubſtituted in the pills; for different conſtitutions, as well as the ſtates of the diſeaſe are ſo various, that one form of medicines cannot be expected to ſucceed in many caſes. The torpid and phlegmatic, will require ſtimulants, ſuch as the foregoing; but the irritable and weakly, require medicines of a more ſedative nature, ſuch as the neutral ſalts, once or twice a week, and pills compoſed of ſoap and ſcammony of each two grains, and from one half to a third of a grain of the tartar emetic, &c. Theſe formulas, and others of a ſimilar nature, may often totally ſupercede the uſe of mercurials advantageouſly, in caſes where they are improper, for they are by no means univerſally admiſſible, even in the chronic hepatitis; and we can from actual experience recommend the foregoing mode of treatment as efficacious, having overcome ſome confirmed caſes in this way.

It was in this ſtate of the hepatitis, that mercury gained all its fame; and alſo in chronic dyſſentery, although it has been unfortunately transferred to both ſtages, and to all ſtates of that, as well as of this diſeaſe. But even here, and in thoſe caſes in which it anſwers the beſt, it is never to be uſed in that empyrical manner, which many practitioners both practiſe and recommend: we would wiſh ſuch only to remember that it is the human body they have to deal with, and to pay ſome attention to the phyſical natures, and the effects of medicines, but particularly of mercurials; and not to uſe this powerful article in a manner of which any rational practitioner ſhould be aſhamed. Inſtead then of the enormous doſes of calomel, of which we ſo often read and hear, our medium doſe has never exceeded one grain, and often not ſo much; and the extreme doſe three grains to an adult, in the twenty-four hours; and in theſe quantities, we are ſufficiently perſuaded, every thing may be accompliſhed, of which mercury is capable, in the moſt enormous doſes; and often much more than can be done by large doſes, in any mode, or way of managing it; for it is not an article that produces all its effects by the firſt impreſſion, unleſs as a cathartic, however ſtrong it may be. But by a continued uſe it changes the actions of the ſolids, principally by ſtimulating them to new actions, and oppoſing the morbid actions, &c. Calomel may be united with emetic tartar, and made into pills, with any ſubſtance of a proper conſiſtence for this purpoſe; purgatives have been commonly added, ſuch as aloes, ſcammony, gamboge, or jalap, and venice ſoap, in order to bring them to a proper conſiſtence: the ſoap has been preferred with a view to ſupply the place of the deficient bile, as in ſome caſes, when they are of very long ſtanding, and the ſtrength much exhauſted; but of theſe and ſimilar ingredients, every one may compound pills adapted to the diſeaſe. It is to be obſerved here, that the articles mentioned, are all, except the emetic tartar, and ſoap, of a ſtimulant nature; theſe may be uſed here in the chronic ſtages of the complaint, as they anſwer to be made into pills, on account of the ſmallneſs of the quantity which ſerves for a doſe; and as they are to be continued for ſome time, this is of ſome importance.

We have known ſome inſtances where mercury was uſed in the profuſe antiquated manner, ſo as to produce a ſalivation, ſoon end in death: for this mineral is now believed by many, to be a ſpecific in this diſeaſe, and conſequently, every one who has paid any attention to medicine, has read or heard of its efficacy in the hepatitis; ſo that the indiſcriminate uſe of it, is common every where, and in all the ſtates, and ſtages of the diſeaſe. Inſtead of calomel, the mercurius dulcis, prepared in the humid way, according to Schele's method, is the beſt of the ſaline preparations; it being precipitated from a fluid, and not ſublimed in the dry way, as the common calomel is prepared: it is much milder than that, and ſhould on this account be preferred in this diſeaſe: we have either uſed this or the blue pills, which is a ſtill milder preparation, theſe twelve years paſt. The common quickſilver pills may be given, one or two at night, and if they are wiſhed to be more active purgatives, one half grain of elaterium, or one grain of ſcammony or gamboge, may be added to each, particularly if there are any dropſical collections of water preſent. It would be a conſiderable improvement if the extinguiſhed quickſilver was ſubſtituted, in the place of the more acrid preparations of mercury, in many other caſes as well as this, where we would wiſh to avoid the formation of matter eſpecially; and at the ſame time to promote the abſorption of extravaſated fluids. But in this diſeaſe, we have experienced this preparation to be peculiarly uſeful; and where there may be any doubt of active inflammation, or ſcirrhus having preceded, this is by far the moſt ſucceſsful of the mercurials, as it is not poſſeſſed of thoſe pernicious properties, which the more virulent preparations are.

In weakly and delicate habits in particular, this mild preparation anſwers well; for there are many who cannot bear it in any other form beſides this alone› The deſtructive effects which we have ſeen in the early parts of our practice in warm climates, has acted as a warning againſt the free uſe of mercurials ever ſince. We loſt about one twentieth part of our ſhip's company by this diſeaſe alone; and our books which are depoſited at the India-Houſe will bear witneſs, that it was not through a want of mercurials that they died, as it was then in great eſteem, and uſed almoſt indiſcriminately in this diſeaſe; unfortunately they got but too much of it. And as we diſſected them all after death, the liver was found in various ſtages of ſuppuration; in moſt of them there were large collections of matter, moſtly of a ſerous appearance, or a browniſh yellow, or a reddiſh colour: in one, the midriff was corroded through, all to a thin membrane next to the lungs; in others, the ſubſtance of the liver was ſcirrhous, intermixed with ſmall tubercles full of matter; in ſome there were two or three pounds of matter contained in the ſubſtance of the liver; and in others there were various appearances. But always the matter had a thin acrid appearance, and the edges of the ulcerated part had an uneven, granular, or corroded appearance. We never ſaw any thing here like what is conſidered good matter; for it never was neither found of a thick conſiſtence, or white color; and from the effects of its contact with the diaphragm, we had no reaſon to doubt of its corroſive nature, for it would certainly have corroded any other part, with which it might happen to come into contact, as readily as this. So that we cannot wonder that it ſhould often make its way into the cavity of the abdomen, or ſometimes into the inteſtines, when adheſive inflammation is produced; and at other times through the integuments of the abdomen, as it ſometimes does, and give a fair chance for making a ſucceſsful opening into it. For there are commonly adheſions produced, between the parts moſt inflamed, and thoſe which come into contact with them.

From attention to theſe circumſtances, it will be readily perceived by the intelligent ſurgeon, that cutting into the part effected, in order to evacuate the matter, is an operation but ſeldom practicable with ſucceſs. It is only admiſſible where adheſion has taken place; for if this is not the caſe, the matter muſt evidently be conſtantly eſcaping into the cavity of the belly, where it will be rather more pernicious than in the liver itſelf, where it might have a chance of being evacuated by the biliary ducts; which although they and the blood-veſſels are generally cloſed, or ſealed up by the coagulable lymph, and the thickening of their coats produced by the inflammation. Which common proceſs of nature generally forms a coaſt for the matter of abſceſſes. But although it may ſometimes be a boundary for the matter here, yet it certainly often corrodes its way through it in various directions. Cutting for the abſceſs is very dangerous in the left lobe of the liver, for here the ſtomach is ſometimes in danger of being wounded.

Moderate exerciſe in the open air of the country is highly uſeful in hepatic affections, when they are of a chronic nature, either walking or riding; but in the acute ſtate of the diſeaſe, it is neither agreeable or proper to be uſed. But it is extremely agreeable and uſeful, in the chronic diſeaſe; for there is no medicine can produce ſuch an agreeable flow of ſpirits without it, as exerciſe does with the aſſiſtance of very few medicines; and the depreſſion of ſpirits, and hypochondriac diſpoſition, which ſo commonly attends this diſeaſe, requires all ſuch mild and inoffenſive means as this to be uſed; eſpecially when there are a hectic diſpoſition, as very frequently happens in this ſtate of the diſeaſe. The advantages of riding and walking in the country air, are long eſtabliſhed as very ſalutary; and on the contrary, confinement in cloſe towns, to ſedentary employments, eſpecially one wherein the mind is much engaged, is one of the moſt unfavourable ſituations; therefore ſhort voyages to ſea, are alſo uſeful, but they ſhould not be ſo long as to be fatiguing, for we would not wiſh any perſon to go to India to be cured of this diſeaſe.

The matter ſometimes makes its way by the biliary ducts, into the inteſtines, this is the courſe which we ſhould always wiſh it to take, for here it may paſs off without injuring any of the functions, whereas when any of it gets into the blood, it cauſes a hectic, as all ſuch matter does when it gets there.

The following caſe occurred whilſt I was laſt in China, in the Royal-Charlotte, it had an anomalous appearance at its beginning, for it was difficult to determine whether it would preſerve the appearance of a diarrhea, accompanied with feveriſh ſymptoms, or turn to a dyſentery, or remittent fever, all of which affections, were much more prevalent there at that time, than the hepatitis, of which it, in a few days, aſſumed all the characteriſtics. October 27th 1790, John Bayley, ſeaman, aged 25 years, of a phlegmatic habit, had been ſome years at ſea, but never in India before, he complained of a diarrhea, accompanied with griping pains of his bowels, for this he had an emetic, and at night ten grains of philonium, the next day being the 28th, his former affections were much alleviated, and his principal complaint appeared to be a coldneſs of his loins, he had five grains of antimonial powder, and about forty drops of ſpirit of hartſhorn in water, and repeated it at going to reſt, with fifteen drops of laudanum, and the next day conſidered himſelf well enough to leave off taking medicine: 30th he mentioned a ſenſation of pain in his right ſhoulder; but as his feveriſhneſs was much leſſened, he had only a doſe of ſal glauberi, and made no more complaint until Nov. 3d. when he complained of a pain of the right hypocondrium, and of the ſhoulder of the ſame ſide, accompanied with a quick pulſe; he had an ounce of ſalts to take at once, and an antimonial powder for the evening, with directions to uſe warm diluents for his common drink, as the diſeaſe now ſhewed itſelf plainly to be a hepatic affection, he had pills compoſed of venice ſoap, and aloes, of each half a dram ant. tart. three grs. made into twelve pills, of which he was to take two, in the day, and the antimonial at night, ſo long as the feveriſhneſs continued; about the fifth, his ſkin was firſt remarked to be of a browniſh yellow color, the 7th, his pains were much alleviated, but as the pills purged him often, they were left off, and he had the antimonial powder with tinct, opi. fifteen drops at night. The tenth all his complaints appeared to be alleviated, but weakneſs, in order to reſtore his ſtrength, he had one drachm of bark, noon and morning. He perſiſted in this courſe and appeared to get well, interpoſing a pill or two at times, until the 17th. When he complained of another return of pain, in his hypochondrium, extending up to the breaſt; the blue pills were now given, two or three daily, and at night the antimonial powder—and next day, 18th, he had a ſevere pain, deep under the ſhort ribs; his pulſe was quick, but ſmall, and his ſkin of a more yellow caſt; from theſe appearances we doubted that even this mild mercurial, was given prematurely. He had one ounce of ſalts in the morning, and at night an antimonial draught—next day, 19th, he had a high fever, quick and ſmall pulſe, and a ſevere pain of the ſide. Antimonial powder in vinegar ſaturated with ſpirits of hartſhorn, was given thrice a day—20th, he was much eaſier, a gentle perſpiration was all over his body: he continued the laſt medicines—21ſt, the ſame medicines, and he endeavours to promote a perſpiration, for he feels eaſy whilſt it is going on; but as ſoon as it dries, he finds by experience that he is worſe in all reſpects.—22d, the pain of his ſide was abated, but he complained of a diarrhea, and griping pains, with feveriſhneſs; a few drops of laudanum were added to his medicine in the evening—23d, the diarrhea and fever were much alleviated; we left off the laudanum, and continued the neutral mixture—and the 24th, he only felt an obtuſe pain of the right hypochondrium. Now again we had recourſe to the blue pills, one only evening and morning, which he continued until the 27th, when the diarrhea was returning, for which he had a ſmall anodyne, and the next day Sal. Rochel, after which he continued the pills, recovering, and felt no pain, except when he lay on the infirm ſide.——30th, he took two of the pills which purged him, and at night he had a doſe of dovars powder. From this he continued to get well, and taking the blue pills, until December 4th, when having no other complaint but weakneſs, he began the uſe of the bark, one drachm morning and noon, and had no complaint during the remainder of the voyage, which was eight months, two of which we paſſed in China, in cold weather, and the remainder, from thence to England. It is to be remarked that it was cold weather at Canton, when this man was taken with the diſeaſe; which although there are ſeldom any froſt; yet it is remarkable cold to the feelings, for a tropical ſituation. We have often obſerved old hepatic affections, alſo appear in the cold, ſtormy weather, off the Cape of Good Hope—the firſt who mentioned this to me, in my firſt voyage, was Captain J. Rogers, who now commands a Britiſh Packet, and was then an old India officer.

Any rational phyſician will, it is hoped, be eaſily convinced of the preference here given the mechanical diviſion of mercury, in preference to the ſaline chymical preparations, where the object is, a wiſh to avoid ſuppuration, and at the ſame time to promote the action of the parts; and conſequently abſorption: for the mildeſt of the ſaline preparations, ſtill retain ſomething of their acrimony, which the ſimple diviſion of the mineral, does not acquire in its preparation; therefore the ointment is on this account alſo, preferable to calomel. But we have not much faith in the application of it over the region of the liver, as the integuments are ſo thick and various, as the cutis, cellular ſubſtance, and its contained fat, the muſcles, and peritoneum—beſides the liver is not connected with any of theſe parts; and conſequently none of the lymphatic trunks of the abſorbents, paſs between them; ſo that the ointment may as properly be applied to the limbs, or lower parts of the abdomen—the emplaſt. ammon. cum. mercurio, we have ſometimes had reaſon to believe, was of uſe; but that we attributed as much to the genial warmth, and relaxation of the ſkin, which it promotes, as to any effects of the mercury.—Of the ſaline preparations, we give a preference to the Merc. Dulcis, prepared in the humid way, and eſpecially when applied in Clares manner, to the inſide of the mouth only, without ſwallowing it. In this manner, we were much in the habit of uſing calomel, in all my voyages to India, on various occaſions; and we are very much of the opinion, that it is attended with ſome eſſential advantages in warm climates; for it is leſs hurtful to the ſtomach when uſed in this manner. This is a material object where the digeſtion is always languid; at the ſame time it produces its full effects on the ſyſtem, as we have often experienced, for two or three grains of it always acts as a laxative with me in two or three hours, without ſickneſs, or unneceſſarily irritating and weaking the ſtomach.

A caſe of hepatitis, wherein the lungs were three fourths obliterated, and their place occupied by a ſerous fluid, without difficulty of reſpiration, or cough.

William Patterſon aged 30, a native of the lower part of North-Carolina, of a phlegmatic habit. In the latter end of the ſummer of 1798, he appeared to be taken with a jaundice : he had alſo frequent attacks of an ague, in the fall, which was eaſy overcome, by the common means, although he ſeldom continued long well at any one time. Theſe affections appearing but ſlight, he ſeldom lay by for them ; for the jaundice he had ſome emetics, and columbo root at firſt, which appeared to remove the complaint, until the winter, when, by getting cold from bad lodging, want of clothing, &c. his diſeaſe appeared to be of a dangerous nature, and he was obliged to keep his bed. An hepatic affection was now viſible, and he was treated accordingly. He felt a pain in the hepatic region when preſſed upon, and an obtuſe pain at all times: as he was much reduced in ſtrength, bleeding was not thought neceſſary ; he had pills compoſed of aloes and Caſtile-ſoap, two grains of each, calomel one grain, tartariſed antimony one third of a grain in each ; of theſe he took one evening and morning, and they appeared to anſwer ſo well, that in two weeks he was evidently better, and in a month there remained nothing but weakneſs, which in two weeks more he had recovered from, and was to all appearance healthy and ſtrong. At this time he was innoculated for the ſmall pox, and had them favourable. From this until the latter end of ſummer, he appeared to be in tolerable health, although frequently complaining of uneaſy ſenſations in the region of the liver : his urine tinged with bile, and his ſkin, and the whites of his eyes were a light browniſh yellow ; but as he had been ſo often ſick, and recovered before, he was unwilling to yield to it, until he became ſo weak, and his legs and abdomen ſo ſwelled that he was ſcarcely able to walk. He frequently complained of pain, and an imaginary tumour in the left ſide of his belly; he had mild laxatives, and the preceding pills, one or two in twenty-four hours, with an infuſion of columbo-root; but they did not produce any permanent advantage; his ſtrength failed gradually, but not ſo as to diſable him from getting up without help occaſionally, until the day he departed. By domeſtic care, this man might have got well after his firſt attack; but this was impracticable, in the ſituation in which he was at that time.

What appeared very remarkable in this perſon's caſe was, that although the lungs were three fourths obliterated, reſembling a concrete ſpongy maſs, he never had been heard to complain of any difficulty of breathing, nor cough, by any perſon; but he had the uſual ſymptoms of a diſeaſed liver, feveriſhneſs, &c. On opening his body after death, we found the liver full of ſmall tubercles, and the gall-bladder contained about an ounce of a pale brown bile; the ſtomach was contracted, and the inteſtines rather ſmall, but little altered from the healthy ſtate. There was about three quarts of ſerous fluid in the abdomen, the morbid ſtate of the liver, although there were no large impoſtumations in it, nor much changed in ſize, we conſidered as fully ſufficient to be the cauſe of all the phenomena of the diſeaſe. But rather through curioſity we took up the ſternum, and to our great ſurprize, found the right cavity of the thorax occupied by a ſerous fluid; and what at firſt ſurprized us, was the obliteration of the lungs, until we diſcovered them concreted into a ſubſtance of about one quarter of an inch thick, ſpongy, and adhering to the mediaſtinum, and pleura, the left lobe was about one third of it in the ſame ſituation, and yet this man had no cough, or difficulty in breathing.

In the firſt of the acute caſes mentioned, mercury was uſed as a ſpecific; for ſo it was then conſidered in all diſeaſes of the liver; but in that young man, we could not be much ſurpriſed at its failure, for he was a very ungovernable patient, and would not keep his bed, but lay himſelf down any where on the cheſts, &c. often without any clothes over him, the weather being warm; but ſeveral others, who were more cautious, under acute affections of the liver, and were treated with mercurials in the early ſtages, ſhared the ſame fate. In all of them the liver was found ſuppurated on diſſection. Commonly large collections of matter were formed; in ſome there were alſo found tubercles, and in others it was found in a ſcirrhous ſtate. That being my firſt voyage, and conſequently being Mate, Mr. G. Lewis, whoſe memory ſhall ever be revered by me, as a gentleman, a friend, and a ſurgeon, but who has long ſince died in Bengal, of this ſame deſtructive diſeaſe, of which he began to feel the effects at that time, ſhewed a good example of diligence in theſe inveſtigations, ſo that we diſſected all thoſe who died. This has always been a rule with me, when practicable, ever ſince. We have known ſome affected with chronic caſes for a number of years, without cauſing much uneaſineſs; an inſtance of which we remember in Capt. J. R. who was our firſt officer in my firſt voyage to India: but theſe affections are ſo common in thoſe who go from Britain to India, that ſcarcely one half of thoſe who are in the Company's employ for a ſeries of years, eſcape them. In my laſt voyage, by uſing more caution in the adminiſtration of mercury, and by purſuing an oppoſite mode of treatment, and by getting better acquainted with the nature of the diſeaſes we had to encounter: we did not loſe one by this diſeaſe, out of a ſhip's company of one hundred and forty perſons, and only one who died of a fever which he contracted at Bencoolen, while we ſtayed there, and when very bad with a nervous fever myſelf. This was the voyage which the Royal Charlotte made in 1790, and 1791, which may be diſcovered by my own journal, and caſe book, depoſited at the India-Houſe, and alſo by thoſe of all the ſworn officers: but this is not mentioned as a boaſt of ſucceſs, but as a recommendation of the modes of treatment here recommended in hepatitis, fevers, and dyſſenteries. It is a ſervice which merits my eſteem, as the firſt in the world for the medical profeſſion: but bad health, and the diſagreeable company of ſome rude north country characters, irregularly introduced into it, when regular mates were ſcarce, were the reaſons of my leaving it ten years paſt.

It is very remarkable, how much the ſtate of the liver is affected by violent paſſions of the mind, particularly by the angry or envious emotions: this is very evident in ſome perſons of weak and irritable fibres, who are frequently taken with fits of ſickneſs at their ſtomachs, and head-aches, from anger, and even in ſome inſtances with a vomiting of bile. This ſhews the ſympathy very evidently, which exiſts between the mind and the hepatic viſcera, as the ſtimulus is ſo immediately communicated to the biliary ducts, and the ſecretory glandular parts of this viſcous; this effect of the paſſions was known to the ancients; ſome of them thought on this account, that the diaphragm was the ſeat of the mind. A conſideration of this circumſtance demonſtrates the utility of an equanimity of temper in acute hepatic affections; it is to be remarked likewiſe, that diſeaſes of the liver, are very apt to affect the mind, as when it is obſtructed, or in a torpid ſtate, and the circulation through it, is either difficult, or obſtructed, it produces a melancholy diſpoſition, with fear and deſpondency; this appears to be the reaſon, why the ancients thought theſe affections were cauſed by a black bile, and hence their name of Melancholia. In caſes of this nature, it is obvious that ſtimulent and reſolving deobſtruents, are the proper applications, with exerciſe gently increaſed, and when the obſtructions are by theſe means removed, then bitters and tonics, in order to increaſe the ſtrength of the parts: the columbo root, &c. is very proper here, after aloetic, ſaponaceous, and mild mercurials. Violent exerciſe, is equally pernicious with violent paſſions, in acute affections of the liver; for either of them agitates theſe parts to an unſafe extent, and Celſus proſcribes them in this diſeaſe. From this it is evident, that their bad effects had been known in thoſe times, by experience. It is to be regretted, that all reaſon and analogy, is commonly laid aſide, when there is any thing obſtruſe, or difficult in a diſeaſe: but the whole of the miſtakes committed in this manner, originate from medical men not paying proper attention to the different phyſical ſtates of the human body, its principles, properties, and laws, and its various actions, and the operations of the phyſical and mental agents on it, as regimen, medicines, &c.—This is an experimental mode of improving ſcience, which were we to pay only a moderate degree of attention to, we ſhould not be ſo very different in our opinions from one another; but ſo long as nominal diſtinctions, ſupercede the place of natural ones, and recipes are more attended to, than the agency of the different medicinal applications, it would be but a folly to expect a reform.

General Observations on the Affections of the Liver, &c.

IT often happens in this, as in moſt other diſeaſes, that there may be an intermediate ſtage, in which it is difficult to determine between the acute, and chronic ſtages; or where there is no acute ſtage precedes, in this caſe it is the ſafeſt method to uſe the antimonial pills only, without mercury; but in caſe that after ſome continuance of them, they appear too inactive, they may be changed for the blue pills, with, from a quarter to half a grain of emetic tartar added to each; and where there are ſevere pains of the bowels, teneſmus, or piles, more acrid mercurials are inadmiſſible, on account of the additional pain which they ſo often promote. A peculiar appearance of the gums has been remarked in this diſeaſe; but it is by no means a common ſymptom; they are ſaid to aſſume a cartilaginous appearance, and grow prominent, and of a pale colour, and hard; but this is an appearance ſo ſeldom met with, that we cannot place much dependance upon it.

It is but ſeldom that hepatic diſeaſes appear in their own proper form; ſimple and uncombined on their acceſs, they are frequently accompanied with dyſſenteric, or feveriſh ſymptoms, and often with both; as may be ſeen by the caſes which we have extracted from many others, in order to illuſtrate the two chief diviſions of the diſeaſe; and alſo the different modes of treatment—it is on this account, that the hepatitis is ſo often overlooked, the fever, or dyſſentery, appearing the moſt obvious, are apt to attract all the attention of the phyſician.

It may be thought our criticiſms on the abuſe of mercurials are too ſevere, but let it be remembered, that when applied to thoſe who either through ignorance, or irrational proceedings, ſport with the lives and healths of mankind, there ſhould be ſomething ſtill more ſevere than words applied, to ſuch offences. Although this diſeaſe, ſometimes makes its appearance, when there are neither fevers, nor fluxes prevalent; yet it muſt be confeſſed, that it alſo often accompanies them, and it is frequently complicated with both; and alſo with a jaundice, or hypochondria: and even with melancholy; ſo that if they could be claſſed as diſtinct ſpecies of diſeaſes—the rule which maintains that two diſeaſes cannot exiſt in the conſtitution at the ſame time, would not be applicable here; nor in fevers, or fluxes, which commonly rage at the ſame times, and in the ſame places, and patients: often alternating with one another; however the moſt dangerous affections, or the moſt prominent ſymptoms, are apt to arreſt our attention, to the neglect of the others—a dropſy, for example could ſcarcely exiſt, independant of other diſeaſes; but it may be ſaid, that theſe are not original diſeaſes; if ſo we have no objection to abridge the catalogue of the number of commonly received diſeaſes, where there are no eſſential phyſical differences. But until that is done in a more maſterly manner, than any thing hitherto attempted, it may be beſt to let them go by their own names, which are received by all mankind, and by which they are underſtood. We are, however, very firmly perſuaded, that theſe ſummer and autumnal diſeaſes, are very nearly connected, both in their natures and cauſes.

Obſtructions and indurations of the ſpleen, are alſo, ſometimes met with in the ſame places, and at the ſame times, with diſeaſes of the liver. One of the moſt obſtinate caſes of jaundice we have ſeen, was cauſed by an enlarged ſpleen, ſo preſſing the ſtomach out of its place, as to cauſe it to act as forcibly, as a ligature on the biliary ducts, ſo that no bile could paſs into the inteſtines. A diſeaſed ſpleen is known by the pain and ſwelling being in the left ſide, rather backwards from the ſtomach; they are ſometimes accompanied with a bleeding at the noſe— By Morgani's accounts of them, they would appear to be as common in Italy, as the diſeaſes of the liver: but as they do not often ſuppurate, the uſe of mercurials, and ſtimulant cathartics, may be had recourſe to more early, than in the affections of the liver. Theſe diſeaſes of the ſpleen, are very common in low, marſhy, and agueiſh ſituations; and eſpecially when intermittents have been for ſome time prevalent, particularly towards the latter part of the autumn, in thoſe who have ſuffered by theſe fevers. This is a clear demonſtration, that they ariſe from weakneſs of the parts, and a languid circulation, which requires ſtimulants, bitters, and ſtrengtheners, as ſnake-root, columbo root, &c. together with gentle exerciſe, as riding, and walking. Tumours often take place in the other viſcera of the belly under ſimilar circumſtances.

DISEASES

OF THE

FIRST PASSAGES.

Choleras, Diarrheas, and Dyſſenteries.

A DYSSENTERY may with great propriety be conſidered as Dr. Moſely, does after Sydenham, a fever turned inwards on the inteſtines. In this view of it, we are led to the moſt ſucceſsful modes of treatment; for it carries our views beyond the local affection, to its radical nature.—But a cholera is generally cauſed by irritation merely, without any fever, but often with a quickneſs of the pulſe; and may be ſoon and ſafely cured, without any attention to feveriſhneſs, merely by allaying the irritation, by warm bathing and warm demulcent drinks, as gruel, chicken broth, &c. and where the affection is very bad by a cautious, but frequently repeated exhibition of laudanum. Diarrheas ſometimes take place at any time of the year, and in all climates, a cold moiſt air, eating much acid fruit, or new fermented liquors, are often cauſes of its appearance; it is a diſeaſe which is ſeldom ever dangerous, or difficult of cure; on that account, by thoſe who are not much uſed to diſtinguiſh theſe affections, dyſſenteries have been ſometimes confounded with diarrheas.

Theſe are a claſs of diſeaſes exceedingly frequent, and dangerous in the latter part of the ſummer, and autumn; they appear to ariſe from an increaſed ſecretion of the inteſtinal canal, and ſometimes of the liver. One variety of the diſeaſe has obtained the appellation of an hepatic flux, when attended with an immoderate ſecretion of bile; but it is very probable that it does not often ariſe primarily from the liver, but from its ſympathizing with the inteſtines. By this means the liver may be affected in the ſame manner as it is in other autumnal diſeaſes. But the origin, the prediſpoſing and exciting cauſes, of this irritable ſtate of the inteſtines, firſt claims our attention; for by knowing the cauſe, and inveſtigating it to its ſource, it may ſometimes be in our power to prevent its effects, and to be more ſucceſsful, and rational in our methods of cure. This is only to be attained by knowing the true cauſes of theſe diſeaſes, their morbid effects upon the conſtitution, and the operation of the remedies.

Dyſſenteries, and remittent fevers, appear to be nearly allied, eſpecially thoſe which occur in warm climates: this appears evidently, from their both attacking at the ſame time of the year, and their being often both produced by the ſame cauſes, and under the ſame conditions of the air, and prediſpoſing cauſes, and from their often interchanging from one to the other.

A cholera, or diarrhea may be brought on, by an acrimony in the firſt paſſages, by whatever means it is induced; ſuch as by eating crude, or indigeſtible ſubſtances, after the ſtomach has been for ſome time out of the uſe of digeſting them, they generally produce the worſt effects.

Obſtructed perſpiration, is alſo apt to cauſe a diarrhea, or ſimple lax—this frequently happens in the autumn, or latter part of ſummer, from wet weather, and ſudden cold ſucceeding great, and long continued heats, after ſtrong exerciſe in the heat of the day, and cooling ſuddenly; eſpecially among thoſe who are expoſed to the night air, or get their feet wet, &c. becauſe of the great ſympathy between the external ſurface, and the ſtomach; for whenever the ſkin is conſtricted by cold, and moiſture, the ſtomach, and inteſtines are in general affected by ſympathy.

For the inteſtines are known to be irritable; their ſtructure being very delicate, and well ſupplied with nerves, and blood veſſels; from theſe conſiderations, as well as from experience, we are aſſured, that they are remarkably ſuſceptible of the action of ſtimuli, by whatever means it is applied to them, or in whatever manner they ſympathize with other parts affected. The leſſening of one evacuation, commonly either increaſes others, or even ſometimes cauſes new ones; it is not to be wondered that in theſe caſes it ſhould fall upon the inteſtines, from their being rendered more ſuſceptible, by the operation of ſtimuli on their very irritable coats.

The exact difference between a diarrhea, and dyſſentary, is not very eaſily known, nor well defined, even by the beſt practitioners. Neverthelefs a perſon of experience, and information, will ſeldom be at much loſs, on this account, either in the diſcrimination of the preſent ſtate, or nature of the diſeaſe; or in the methods of treatment ſuited to the different varieties, or ſtages of it: as the preſent and antecedent ſymptoms, habit of body, age, &c. are the only rational indications, either for the cure, or prognoſtic. But young, and inexperienced practitioners, are very often at a loſs in all theſe reſpects; for as they too often go by the name of diſeaſes, without inveſtigating the ſymptoms, and their nature, and cauſes, ſo as to form their curative intentions therefrom, but follow indiſcriminately the methods found in books, or elementary lectures, &c. they will not readily find the differences ſo well marked in nature, as they are upon paper; ſo that the ideas which they had formed of them, are commonly very confuſed; but they are apt to imagine, in theſe caſes, that the diſeaſes are confuſed, and their books and ideas right. Therefore, they may be ſome time in ſuſpence, which of the denomiuations to give to the diſeaſe, or the phyſical ſtate of it preſent; or methods of treatment—and here the advantage of medical philoſophy; a knowledge of the animal economy, and experience, are of eminent advantage. At the ſame time it is eſſentially neceſſary, to make a proper uſe of our own ſenſes, and our reaſon, in theſe as well as in all other diſeaſes—for without theſe, all the information, and experience in the world, will not make a good phyſician.

As practical utility, and preciſion are the objects we have in view here; we do not conſider diſtinctions of any uſe, which do not contribute to this purpoſe, in ſome degree—but as in practice, we often acquire a knowledge of indications, and preſages, which it is very difficult to communicate, either by words, or writing; and in many inſtances impracticable, by reaſon of our ſenſations being much more extenſive than our words, or our capacity of conveying our ideas in any language. For in touch, taſte, ſmell, ſight, and hearing, we have an immenſity of perceptions which we cannot deſcribe, as every one may be convinced, by the experience of people of every claſs, being ſo expert at recognizing their acquaintances, by the appearances of their faces at one view. We know this to be certain; but it would be impoſſible to communicate all theſe marks by words. The ſame may be ſaid of hearing, for we can diſtinguiſh thouſands of our acquaintances, men and women, by the ſounds of their voices; and our nicety in diſcerning the difference of muſical notes; and even our taſtes, are more extenſive and accurate, than the words of any language whatever; for who could diſtinguiſh the different, particular taſtes by words, much leſs their combination—and ſmells, are as difficult to deſcribe, and diſcriminate; and even touch, although the leaſt extenſive of all our ſenſes, as we may know by experience, in diſtinguiſhing pulſes; which thoſe alone who have been long, and attentively engaged in can know. Now as we are certain, ſuch ſtands the caſe, between our languages, and our ſenſations, we may, from hence be convinced, of the impoſſibility of communicating the whole ſcience, of the practice of medicine, either by books, or lectures, or any other way by language; for it is but a part of our ſenſations which can be communicated in that way, by any language.

When there is ſimply a lax, we call it a diarrhea; it is generally accompanied with griping pains in the inteſtines, with borborygmi, or the noiſe of air paſſing from one part of the inteſtines, to another. This ſhews that air is extricated from their contents: and the unnatural ſtimulus of it upon their very irritable coats, is a principal ſource of the pains cauſed by the diſeaſe; this ſenſation is commonly underſtood by a griping. Diarrhea is in general without any inflammation of the inteſtines, or at leaſt without any external appearance of it from the pulſe; but at the ſame time we are to remember, that inflammations of the ſtomach, or inteſtines, cauſe a languid, weak, but quick pulſe. Draſtic purgatives produce the ſame effect; and even after they are evacuated, their effects ſometimes remain in the inteſtines, and other viſcera, and ſtimulate them to action, and ſecretion; and there are ſufficient proofs, that ſubſtances producing the ſame effects, are ſometimes formed in the ſtomach, and inteſtines, as we may obſerve often happens from paſſions, wet feet, &c. and an acid in the ſtomach or inteſtines, or their contents becoming putreſcent, or an over quantity of bile accumulated there, from an obſtruction of the paſſages downwards. Or as it ſometimes happens, from the matter of an abſceſs, of any of the abdominal viſcera being depoſited in the inteſtines, by their excretory veſſels. Worms are likewiſe apt to cauſe a diarrhea, by their ſtimulating them; and even a weakneſs of the glands of the inteſtines, or an inactivity of the abſorbents, or of the lacteal veſſels.

When the periſtallic motion of the inteſtines is ſimply increaſed, and their contents hurried down through them before the more fluid parts can have time to be abſorbed, accompanied with a weakneſs; and theſe contents together with the excretions made by the membranes, glands, and excretories of the inteſtines, are ſpeedily evacuated, then the diſeaſe is more properly termed a lientery. In this variety of the affection, when there is great faintneſs, and weakneſs, and two or three evacuations are produced from the ſtimulus of a meal, it has been ſuppoſed by ſome, that the food was thrown out as ſoon as taken. This however is not the caſe; for although the ſubſtances paſs off more ſpeedily than in health, they require a conſiderable time to paſs through the firſt paſſages, the ſubſtances which were there before, paſs off firſt; but they are haſtened by what follows, often not much changed in its appearances by digeſtion. This affection ſeems to be cauſed merely by an increaſed weakneſs, and an over great degree of ſuſceptibility of the inteſtinel canal and ſtomach. This affection may either be overcome by medicines, or go off of itſelf by a natural cure, or even cauſe death by exhauſting the patient, without ever producing any inflammation: here ſedatives and ſtrengtheners are obviouſly requiſite. But when the principal characteriſtic ſymptoms ſhew inflammation to be preſent, ſuch as violent pains of the inteſtines, teneſmus, feveriſhneſs, &c. it is probably the eryſipelatous ſpecies of inflammation; it often appears to begin in the ſtomach, and gradually proceeds downwards to the rectum, accompanied with a frequent deſire to evacuate, with ſtraining and pain, and the evacuations either conſiſt of mucus in various forms, and appearances, from the inflamed ſurface of the inteſtines, or ſerous matter, or in ſome inſtances blood in large quantities, and often repeated.

Thus it would appear that when an irritability affects the whole of the firſt paſſages ſuddenly, it produces cholera; and when only ſlowly and ſlightly affected, it cauſes a diarrhea; but when the affection of the whole canal comes on ſlowly, and not affecting the ſtomach much, by ſympathy or otherwiſe, but occupying the lower part of the canal or the rectum, with a fever and teneſmus, and other appearances of great irritation, then the diſeaſe is a true dyſſentery. Dyſſenteries may occur in the temperate climates, in the autumn, but much more frequently in warm countries, eſpecially where there are marſhy exhalations, impregnated with thoſe from the docompoſition of animal and vegetable ſubſtances; which proceſſes extricate noxious airs, in ſuch conſiderable quantities, as to impregnate the atmoſphere. Some have, without ſufficient reaſon, attributed the dyſſentery to the uſe of fruits, in warm weather; but it ſhould be remembered, that although dyſſenteries appear in the autumn moſt commonly, they are the more prevalent in proportion to the heat and moiſture of the preceding ſummer; for when the ſummer has been long and warm, and frequently wet, we are apt to have many dyſſenteries; and when the ſummers have been more moderate, and leſs rainy, there are fewer, or even none of them ſome years. And we often ſee many people ſeized with a dyſſentery, without eating any fruit; nevertheleſs fruit may act as a purgative in thoſe prediſpoſed to it; and by accumulating a ſuperabundant acid in the ſtomach, &c. a diarrhea may follow, which on ſome occaſions, degenerates into dyſſenteries; but this often happens whether they eat fruit, or not, when they have been expoſed to the other prediſpoſing cauſes. Diarrheas often happen in warm climates, after people have been for ſome time at ſea, and habituated to an uniformity of food, and drink, ſuch as dry biſcuit, and ſalt meat, without any freſh vegetables, or fermented liquors: for after living for ſome months on theſe ſubſtances, as muſt be the caſe in a voyage to India, a very trifling change of diet affects their bowels with griping pains; and if they are much expoſed to marſhy exhalations, from an unwholeſome neighbourhood, this may turn to a dyſſentery. We have had repeated experience of this when in India.

The prediſpoſing cauſe of dyſſenteries appear to act in this manner; during the continuance of warm weather. the fluids are invited by the heat, and relaxation of the veſſels on the ſurface of the body, to flow outwardly: and the internal large veſſels are left in a ſtate of emptineſs, and relaxation. By this means they are weakened, and become more ſuſceptible of the operation of ſtimuli applied to them; and when cold is applied to the ſurface, ſo as to cauſe a contraction of the extreme veſſels, then the blood is thrown upon the internal parts, ſo as to prove a ſtimulus to them. Which, if the body is already prediſpoſed, by the effects of noxious miaſmata, having preceded the application of cold, for ſome ſpace of time, while the heat laſted, a dyſſentery is commonly the conſequence. The inflammation in this diſeaſe appears to be of the eryſipelatous ſpecies, we believe ſeldom with any mixture of the phlegmonous; and the idea which Sydenham and others had of the dyſſentery, when they called it a fever, *(sui generis)* turned inwards upon the inteſtines, appears to be a very juſt one, and well adapted to explain its nature and appearances. But we are not to confound the different ſtages of it together; for as proper diſtinctions, where they point out different indications of cure, and modes of practice, and uſeful diſcriminations, are the ſpirit of ſcience, they are highly neceſſary to be applied to this diſeaſe, as well as to many others; therefore it would be a very imperfect method to be too general, either in our definitions, or our modes of treatment, we muſt therefore learn to diſtinguiſh one variety from another, as well as the different ſtages of the diſeaſe, before we can be competent to attack either variety with ſucceſs.

A true dyſſentery, is very rarely a diſeaſe either of cold, or temperate climates, in that violent, and deſtructive form, in which it appears in the unhealthy, tropical countries; yet it ſometimes ſucceeds diarrheas, which are cauſed by obſtructed perſpiration, after warm ſummers, and in crowded places. When once it has appeared, if the air is confined, and ſtrongly impregnated with the effluvia ariſing from the ſick, the diſeaſe may, and often does become infectious, as it often does in the confined habitations of the poor, and in priſons, hoſpitals, camps, and ſuch places. And thoſe who harbour any doubts of the dyſſentery becoming infectious in ſuch ſituations, muſt have been very much confined to a local practice, and alſo unfaithful to the reports of the moſt eminent practical phyſicians, who have wrote upon it, as Pringle, Degner, Clark, and many others. But in the mild form in which it appears in an open country, the evil effects of its infectious nature, may ſcarcely appear in any conſpicuous manner; but neither does the virulent infection of the peſtilential fever operate in an open country.

The dyſſentery has ſometimes appeared as infectious and deſtructive as the plague, and ſwept away whole fleets, and armies, and beſieged towns, and garriſons; many inſtances of which are on record, both in medical, and common civil hiſtory; particularly in the war which concluded in the year 1763, between England and the combined forces of France, and Spain, when the combined fleet loſt in the hoſpital at Breſt, twenty-ſeven thouſand men, one hundred and fifty nurſes, and all the medical people but one. Diſeaſes of this nature have often been denominated plagues, from their raging ſo fatally; and there is no room left to doubt, that when the air, by being confined about thoſe who have the dyſſentery, eſpecially where there are a number ſick at the ſame time, is as infectious as any fever, eſpecially where the prediſpoſing cauſes have prepared people to receive it, as often happens in the autumn.

Dyſſenteries become infectious in the ſame manner as autumnal fevers do, by a neglect of cleanlineſs, impure air, or in crowded ſhips or houſes, eſpecially where they are ill ventilated; hence the great advantage of free air, and cleanlineſs, in preventing theſe diſeaſes from becoming infectious, by their effluvia impregnating the air very ſtrongly; the confined air of either houſes, or ſhips, becoming ſtrongly impregnated with the effluvia of the ſick, cauſes the diſeaſe to be more malignant in thoſe who are infected with this ſtrong effluvia; and the malignancy increaſes in proportion to the ſtrength of the impregnation of the atmoſphere. Hence the reaſon why infectious epidemics become ſo much more dangerous and malignant, when they are very infectious, than at any other times; for the more prevalent and infectious they are, the more ſudden, and violent are their effect on the human body.

The method of preventing the ſpreading of the infection of the dyſſentery, is much the ſame as that which anſwers beſt in fevers, as free air, and cleanlineſs about the ſick; not ſuffering any excrementitious matters to remain in their apartments; and ſo diſpoſing of them that they may not impregnate the air with their effluvia, ſo as to prevent their communicating the infection to the healthy.

On board of ſhips, theſe precautions are more particularly neceſſary, with reſpect to cleanlineſs; and whereever men are much crouded together. For it is to be obſerved, that diſeaſes are much more apt to become infectious on board of ſhips, than on ſhore, on ſeveral accounts, and the infection is likewiſe more apt to ſpread in ſhips on account of the want of freſh air between decks, when there are no ports or ſcuttles open, as muſt often be the caſe in ſtormy weather; becauſe the decks of ſhips are always much lower than the ceiling of rooms, in the ſmalleſt houſes. But a third, and greater cauſe is that of men being much more numerous in the ſame ſpace in ſhips than they ever are in houſes; and this with the other cauſes are fully ſufficient to generate a vitiated air. By the reſpiration of a number of people in a confined air, they ſoon deprive it of its vital principle, which is indiſpenſibly neceſſary to ſupport animal life, and health; and likewiſe the exhalations from their bodies, ſoon impregnate the air with their effluvia; and in this way they not only propagate infectious diſeaſes already prevalent, and render them more malignant, and virulent; but they likewiſe often generate them originally—from all theſe cauſes concurring together, it is evident that ſhips are more apt, either to generate, or to propagate infection, than either priſons, or hoſpitals, ſo juſtly ſuſpected of it.

There have been many ideas of the cauſes of dyſſenteries; we hope this will appear more rational than ſome of them. It has the ſanction of a variety of experience, in different parts of the world, in which we have practiſed, in its favour, and treated this diſeaſe in a manner nearly ſimilar to this recommended; the deſcription is ſuch, as the nature and appearances of the diſeaſe have ſuggeſted to us, both in warm and temperate climates.

Indurated fœces have been, by ſome eminent practitioners, and teachers, ſaid to be a very general cauſe of the dyſſentery: particularly by Pringle, Chalmers, and Cullen, who does not appear to have ever had much practice in true dyſſenteries himſelf, but to have followed others in his account of this diſeaſe, in his firſt lines. That indurated fœces, as well as rancid or oily food, or worms may bring on a lax, there can be no doubt, eſpecially in very irritable habits of body, and of the inteſtinal canal. But we are very confident from experience, and alſo, from the obſervations of other practitioners, that indurated fœces are by no means ſuch frequent cauſes of dyſſenteries in warm climates, as thoſe eminent practitioners would perſuade us to believe; for there are very few, either of the modern, or ancient phyſicians ever mention the circumſtance: and beſides, it does not appear credible that hardened fœces themſelves, could put the whole human frame into ſuch high fevers, as generally attends true dyſſenteries. Therefore there muſt be a prediſpoſition to the diſeaſe exiſting in the conſtitution, before any of theſe exciting cauſes can operate effectually in producing this diſeaſe. And the prediſpoſing cauſes as we have already ſhewn, are not much different from thoſe which cauſe autumnal remittent, and intermittent fevers.

There are ſufficient reaſons to perſuade us, that when the human frame is prediſpoſed to the dyſſentery, by being expoſed to the foregoing cauſes, very ſlight occaſional cauſes, will excite the diſeaſe; ſuch as ſudden alterations of the temperature of the air, from heat to cold; and this is very commonly the caſe at the time when it appears; but eſpecially rainy weather, after great heats, are very apt to cauſe its appearance; and the more ſo, if both cold and wet weather ſuddenly ſets in together. For the cool air, and dews of the evenings, after the heats of the days, are peculiarly apt to cauſe the dyſſentery to appear; and they will cauſe it the more certainly, if thoſe who are expoſed to them, are in an inactive ſituation: as ſitting out of doors, or in open boats, ſtanding or ſitting in any manner. For then the external ſurface is chilled by the cold, and the ſmall veſſels contract, and get into an inactive ſtate, and the fluids are forced inwards upon the large veſſels, and interior viſcera, particularly thoſe of the belly, and from their lax, ſtructure, and the ſlowneſs of the circulation through them—the blood, upon its return from them, having to force its way with very little aſſiſtance through the peculiar ſyſtem of the liver. When we conſider this and the preceding account, we may find ſufficient reaſons for the diſeaſes in queſtion.

Redundancies of bile have often been ſaid to be the cauſe of dyſſenteries, as well as of fevers, the reaſon is obvious; bile is the only one of our ſecreted fluids, which has a particular colour of its own; of which it cannot be deprived by any of our digeſtions, through which it paſſes, nor by mixture with any of our fluids; except the acid of the ſtomach, which renders it black. And on account of its copious appearance it may be rendered hurtful by its quantities. But the reaſon why the quantity is thought to be hurtful, is becauſe it is the only fluid ſecreted into the inteſtines, which is very conſpicuous—the other fluids are in as great quantities, in proportion, and if they were as eaſily diſtinguiſhed, diſeaſes of this claſs would as often be called pancreatic, as bilious; and as to the operation of heat on the bile, it is contrary to fact and reaſon; for heat can have no immediate effect on the bile, nor on any of the interior viſcera, but in a ſecondary manner: for it is a fact as well eſtabliſhed as any we are acquainted with, that the blood, in the interior viſcera, is no warmer under the heats of the torrid zone, than within the polar circle; that is, about ninety-ſix degrees of Fahrenheit's thermometer. Therefore the heat of the weather, cannot poſſibly exert any immediate action on the bile, whatever it may on the irritable parts of the body on which it can act, either immediately, or through other intermedia. as the ſkin or other ſuperficial parts.—The ſtimulus, however, which cauſes a large ſecretion of the bile, is moſtly communicated along the duct, from the ſtomach and inteſtines.

It appears that in all the diſeaſes of the inteſtines, there is a conſiderable degree of ſuſceptibility of ſtimuli, and this is a principal cauſe of their affections, whether cholera, diarrhea, or dyſſentery; and by whatever means this ſtate of the inteſtines is induced, it may cauſe theſe diſeaſes, in the manner explained; and it may be attended with inflammatory ſymptoms, in thoſe who are affected in theſe ways, particularly in the young and robuſt. The dyſſentery in particular, is more frequently attended with an eryſipelatous inflammation of the inteſtines, but irritation alone, when they are very ſuſceptible appears to cauſe choleras, or diarrheas—but we are not to depend upon this to be always the caſe; for irritations on very ſuſceptible parts, may cauſe either inflammation or ſpaſm. But of this, we are to judge from the habit of body, the external appearances, the pulſe, and the ſymptoms of which the patient complains.

Inflammations of membraneous parts, as the inteſtines, and their contiguous parts, notwithſtanding their muſcular fibres, are very different from ſimple inflammation of muſcular ſubſtances; this laſt being by ſome, alone called the phlegmonous inflammation, it is commonly ſpeedy in its progreſs, either to ſuppuration or diſſipation: but inflammation of the membraneous parts, are very ſlow, either in coming to ſuppuration, or in being diſperſed.—Some have confined the eryſipelatous inflammation, to membraneous ſubſtances, and the diſtinction is very often juſt, although by no means to be generally depended on; and there are ſometimes a mixture of the two kinds of inflammation in ſome inſtances, which principally attack parts, the compoſition of which are membraneous, interſperſed with muſcular fibres, and of this texture the inteſtines are. And reaſoning from analogy from the external parts of the ſame ſtructure: and alſo the methods of cure which are moſt ſucceſsful in both, which are the ſureſt data to proceed upon; this account of the diſeaſe appears to be founded on facts and reaſon.

Dr. Cullen would make the principal difference between diarrhea and dyſſentery to be, in this, that the dyſſentery is always propagated by infection. And that the diarrhea is not infectious; this would be a very imperfect diſtinction. Dyſſenteries very often appear ſuddenly when wet, and cold weather ſucceeds long heats, without any poſſibility of infection, although it may become ſo afterwards; yet if a rigid adherent to Dr. Cullen's doctrine, were to treat the diſeaſe, as a ſimple diarrhea, until he was convinced that it was infectious, and conſequently a dyſſentery; he might be too late for many of his patients, before he had found out the diſeaſe.

The concomitants of feveriſhneſs, teneſmus, and violent pains of the inteſtines, are much better ſymptoms to know a dyſſentery by, than its manifeſting itſelf by infection. The teneſmus however, does not appear in common ſo early as the other ſymptoms; it is commonly later in making its appearance, and alſo in giving way.

This is probably the reaſon why it was ſuppoſed that the irritation and inflammation, firſt begun in the ſtomach, and from thence deſcended down through the whole courſe of the inteſtines, and finiſhed at the rectum. The deſcent however, is not gradual, for the inteſtines appear to be much affected from the beginning, either by ſympathy or otherwiſe; and in the diſſections of thoſe who die, ſome parts of the inteſtines are much more affected than others, with the appearances of inflammation, and ſometimes petechial ſpots, which may be a conſequence of the great irritation, and inflammation, but not their cauſe.

Moſt of the Ancients ſuppoſed ulcers of the inteſtines to be the immediate cauſe of the dyſſentery, until Alexander, of Tralle, ſhewed them to be rather an effect of the diſeaſe, than a cauſe, when they did happen, which they do not always. For the interior membranes of the inteſtines, may be long in a ſtate of irritation; and like every other membraneous ſurface in that ſtate, produce a larger ſecretion of mucus—and ſometimes, though not generally, (apthœ) ſmall white ſpots, which form ulcers, when they have gone on for ſome time, which ulcers, though ſmall have prominent edges, and diſcharge a ſerum. But the ſerous diſcharge, does not depend entirely on the ulcers; it is often diſcharged from the inflamed ſurface of the inteſtines, long before any ulcers can have time to be ſo far andvanced; and this we know is the courſe of morbid irritation, in any other membraneous cavity—for inſtance, in gonnorrhea, coryza, or cattarh. They begin firſt, with an increaſed ſecretion of the natural mucus, which ſoon becomes thin, and acrid, and does not anſwer for its natural uſe of defending the ſurface from its contents. Therefore the inflammation and its cauſe, ſtill increaſes the irritation, upon theſe accounts, and of conſequence, the veſſels dilate, and ſuffer ſerum, and even red blood, to eſcape into their cavities. This is the common courſe of a dyſſentery, and the reaſon why the diſeaſe is more apt to fall upon the inteſtines, than on the lungs, or any other of the viſcera, may be ſeen in what is ſaid already.

Dr. Cullen enumerates many varieties of the dyſſentery, under the head of diarrhea, and what is of much worſe conſequence, he abſolutely forbids the uſe of all ſorts of purgatives, in every variety of the diarrhea, (unleſs we can reckon emetic tartar among purgatives) even in the critical evacuation of fevers, when it falls upon the inteſtines—he makes no exception to the general rule, and the diſcharges from internal abſceſſes, when they are evacuated by the inteſtines, &c. in theſe, although he mentions them, he makes no good practical diſcriminations: but forbids abſorbents, and purgatives, and recommends aſtringents, roborants, and opiates. But we are certain, that theſe precepts, by being faithfully followed have been the cauſe of much miſchief in caſes of this nature. And we hope the bad effects which they have, and will always produce, will deter every rational practitioner againſt a practice, ſo pregnant with evil conſequences as that muſt be; for by ſhutting up ſuch diſcharges in the paſſages, we may expect fatal effects: as dropſies, tumours, and gangrenes of the injured parts, from the acrid matters being pent up in them, which ſhould by all means be evacuated. By this and many other inſtances we may ſee that medicine, as well as philoſophy, has often in the ſchools degenerated into ſpeculations, eſpecially when practice, and reaſon, are not duly attended to.

We are ſorry that we muſt differ in opinion here from a practical author on this diſeaſe, (Dr. Moſely) who practiſed on land in the Weſt-Indies, and probably in well ventilated military hoſpitals, and private practice, denies that there is any infection, in this diſeaſe: and in fevers he ridicules the idea of it. In the Weſt-Indies, from the free air, which there is no reaſon to guard againſt, either in fevers or fluxes are good reaſons why they are not infectious; but even there, where many people are crowded together in hoſpitals, or jails, they become infectious; but particularly in ſhips of war, or tranſports, where many people are crowded together, and the air vitiated by their effluvia; and had Dr. Moſely ſeen either a bad fever, or flux in ſuch ſituations, we can depend on his good ſenſe, he would have been convinced they were both highly infectious. A perſuaſion of this, and the moſt effectual means of preventing its ſpreading, is a ſubject of the firſt importance to a practical phyſician, in any climate. Moſely ſays, as to contagion from infection in the dyſſentery, he never ſaw it. We can believe him; but he might have ſeen infection without any contact, communicated through the atmoſphere; for we do not ſuppoſe that it requires actual contact to propagate this diſeaſe, any more than fevers do: but with many others, he does not appear to have a juſt idea of theſe terms. Was this only an idea of the ſchools, we would not think it merited much attention from practitioners.

After what has been ſaid, the ſymptoms are not difficult to be underſtood. The diſeaſes with which the dyſſentery is moſt frequently combined, are remittent fevers, diarrheas, or choleras, ſometimes at the beginning, but it may readily be diſtinguiſhed from the choleras—this laſt being ſo rapid in its progreſs, coming on with frequent vomiting and purging, of bilious matter, great and ſudden weakneſs, and languor, and by its ſoon giving way to the proper treatment, as diluents, with bland oils, as that of almonds, or olives, and opiates. Whereas, the progreſs of the dyſſentery is more ſlow, and generally aggravated after the uſe of opiates, at the beginning; but the dyſſentery often begins more like a common lax, and goes on increaſing, in violence, with an uneaſineſs at the ſtomach, and violent griping pains in the inteſtines, with a frequent deſire to evacuate, with little or no effect; or perhaps a little mucus or ſerum is only diſcharged, whereas, in a diarrhea, the diſcharge is generally large, without thoſe fruitleſs ſtrainings, and gripings, teneſmus or fevers; for teneſmus, violent griping pains, and fevers, are the principal ſigns by which to diſtinguiſh a flux, or dyſſentery, from a diarrhea; and to theſe may be added, as the diſeaſe advances, the mucous and ſerous diſcharges, which never appear in a diarrhea; for it is not accompanied with the ſigns of violent inflammation, and irritation in the inteſtines; but in the dyſſentery theſe ſigns are generally apparent. We may likewiſe judge of the diſeaſe from the ſeaſon of the year, or the diſeaſes which are prevalent, dyſſenteries moſtly appearing in the autumn, or the latter part of ſummer; but they ſometimes appear in ſpring, and at other times. Diarrheas often proceed from ſlight cauſes, as obſtructed perſpiration, eating much fruit, or rancid, oily food, and are eaſily overcome, by a doſe or two of rhubarb, an emetic, and laudanum; but in a dyſſentery, rhubarb, or laudanum, leaves the patient worſe after their uſe. We are to diſtinguiſh it from fevers alſo by a knowledge of the prevalent epidemics of the time, and alſo from the violence of the ſymptoms; for although it is always accompanied with a feveriſhneſs, the dyſſentery ſhews itſelf to be the reigning diſeaſe, although ſometimes they are both prevalent at the ſame time, and interchange from one to the other. In this caſe we would adviſe, as in all other ſuch combinations, to pay moſt attention to the moſt urgent or prevalent ſymptoms; and as moſt part of the treatment of one diſeaſe in this caſe, anſwers for the other, when the indications are properly attended to, there is but little danger of falling into any capital miſtake here. Although the dyſſentery very frequently begins as a diarrhea, and goes on increaſing in violence, from the prediſpoſition of the patient, and the exciting cauſes, operating together, yet in ſuch caſes, it will not yield to the common remedies of diarrheas, and ſoon demonſtrates its nature, by the ſymptoms above mentioned. Yet it ſometimes appears more ſuddenly, with feveriſhneſs, violent griping pains, ſickneſs at the ſtomach, frequent, but fruitleſs ſtraining, which ſeamen call dry gripes, with great irritation, and inflammation of the inteſtines, with ſpaſmodiac contractions in different parts of them; this laſt ſymptom may be increaſed, by the hardened fœces, which are pent up, and their more fluid parts abſorbed by the heat and inflammation. This alſo appears to be the caſe in the peſtilential fever: for there was generally a coſtiveneſs accompanying it, with an inflammation of the ſtomach and inteſtines; for violent inflammation here may prevent the natural excretions in the ſame manner, as in fevers often happens from the ſame cauſe: but a coſtiveneſs with hardened fœces, is not a general ſymptom of the dyſſentery.

We remember experimentally, when the dyſſentery was beginning its attack on the weſt coaſt of Sumatra, that the ſtomach was the firſt part where we commonly perceived the ſickneſs, and from thence it extended to the inteſtines, cauſing griping pains, and a lax, and when ten days in this condition, and taking ſeveral emetics of tartarized antimony, and ipecacuanha, and purgatives of the neutral ſalts. Nevertheleſs, the diſeaſe gained ground, and did not appear to be much alleviated by theſe medicines, and ſoon turned to a true dyſſentery, with feveriſhneſs, teneſmus, and frequent and large diſcharges of ſanious matter, which laſted two or three weeks, with calls every hour or oftener, in the courſe of the day, and forepart of the night. And in every caſe which we have ſeen, the pain and violence of the diſeaſe was exaſperated towards evening every day, and increaſes until about twelve o'clock at night, and then it commonly becomes eaſier, with ſome ſleep, after which they are commonly eaſy all the morning, until about twelve at noon, when the teneſmus, and griping pains, in different parts of the bowels, and feveriſhneſs return as before, and runs the ſame diurnal courſe over again.

The dyſſentery, as well as fevers, is rendered more malignant, by infection; and by that ſeptic ſtate of the ſolids and fluids, which prediſpoſe the body to remittent fevers: ſo that by this means, when there are many perſons labouring under the diſeaſe, and the air ſtrongly impregnated with the infectious effluvia, the diſeaſe is more rapid in its courſe, and more dangerous, than otherwiſe it uſually is. In children, beſides the cauſes common to grown people, there are others which prediſpoſe them to the dyſſentery; their habits of body are more irritable, and the cutting of their teeth, increaſes that diſpoſition, and irritates the inteſtines, as well as the ſtomach, by ſympathy; and by that means diſpoſes them to diarrheas, and dyſſenteries. And another cauſe with them, is, that about that time, they are over fond of green fruit, and ſweet ſubſtances; and they are then beginning, beſides their milk, to uſe other food, which muſt certainly be hard of digeſtion, to their weak organs, more eſpecially as it is quite new to them. There are ſome children however, which are little affected by any of theſe cauſes, being of ſtrong conſtitutions; even in the cloſeſt towns, where this irritable diſpoſition is much more prevalent, than in the healthy parts of the open country. For there it is but a rare diſeaſe with children, even in ſummer, when the cauſes of it are more prevalent, from the heat, and increaſed irritability; hence the open healthy parts of the country, are the beſt ſituations, either to prevent, or to cure this diſeaſe in children; but large and cloſe built towns are their deſtruction.

It is now time that we ſhould come to the cure of the dyſſentery; and in the firſt place, although bleeding may not be the firſt thing to be done, yet as it has been a queſtion much agitated by practitioners on this diſeaſe, we ſhould in the firſt place, deliver our ſentiments of it; for ſome practical writers abſolutely forbid it in the dyſſentery, and others recommend it as generally uſeful, or abſolutely neceſſary; but the difficulty is, that general rules, in the practice of the healing art, without proper diſcriminations, are oftener hurtful than uſeful. Could any of thoſe who inſiſt that bleeding is improper, aſſure us that we ſhould never meet with any perſon of an inflammatory diſpoſition in the dyſſentery, we ſhould agree with him, and never think of taking blood, of any perſon under the diſeaſe. And thoſe who inſiſt on its general utility, we would anſwer in the reverſe manner; that in caſe the diſeaſe was always accompanied with an inflammatory tendency, bleeding would be always neceſſary. But as neither of theſe caſes are univerſally preſent in this diſeaſe, nor perhaps in any other, therefore, as general rules, they are both equally fallible; and therefore, every perſon, who is properly qualified, muſt be left to judge for himſelf, whether his patients in this diſeaſe, and how many of them, require this operation, by their ages, ſexes, habits of body, &c. and this may be a general rule applicable to the operation of phlebotomy, either in this, or indeed in any other diſeaſe, and the leaſt exceptionable alſo. The diſtinguiſhing erythiſm, or irritability, from phlegmonous inflammation, will be as neceſſary here, as in any other diſeaſes; for it is in the latter only, where drawing of blood can be of advantage, and this ſtate may be the eaſier learned, as it is the young, robuſt, and plethoric, who are moſt apt to be under a phlegmonous diſpoſition; and on the other hand, the aged, weakly, and irritable, are more apt to labour under the erythematic, and irritable diſpoſition; and in theſe laſt, blood-letting is ſeldom proper, and often hurtful, becauſe it reduces their ſtrength, and vital energy, without removing their irritability, or taking off the erythiſm, and leaves them in a worſe ſtate than they were before it was performed.

In the ſtrong and plethoric, when the pulſe is hard, full, and frequent, bleeding is abſolutely neceſſary, and may be repeated in proportion to the urgency of the ſymptoms; but that we muſt leave to the prudence of the practitioner, who is to be guided by his experience, and his reaſon. When much feveriſhneſs accompanies the diſeaſe, with pain acroſs the orbits of the eyes, and they feel as though they were ſwelled, it is a very ſtrong indication for bleeding; and ſo is a burning heat, and pain in the ſtomach, which ſometimes occurs here, and acute griping pains in the inteſtines. But bleeding may be the more neceſſary, where the ſituation is generally healthy, and on the approach of hot weather, as in ſpring, or ſummer; than in low, wet, marſhy, and agueiſh ſituations; for in many ſuch ſituations as this, the inhabitants ſcarcely ever require bleeding in any diſeaſe; but ſtrangers lately arrived from more healthy ſituations, frequently require it, in caſe they are taken with this diſeaſe, within a year or two after their arrival. There is ſuch a diſtrict of country as this mentioned, producing agues, remittents and fluxes, extends with very little interruption from Wilmington in Delaware, to the ſouthern boundary of the United States, and from the ſea coaſt, to from fifty, to one hundred miles inland, where the inhabitants can very rarely bear bleeding in any diſeaſe; but where they have the advantage of the ſea air, there are ſome exceptions, and in a few other healthy ſituations. Bleeding muſt appear to any reaſonable man improper in the weakly, the aged, and thoſe who are much reduced previouſly, or worn down with other diſeaſes, in any ſituation, but more ſo in marſhy, low, and unhealthy diſtricts of the country, where agues are prevalent. When the dyſſentery comes on ſlowly, beginning as a diarrhea, it is but rarely that bleeding would be of any advantage; as this variety of it is ſeldom accompanied with any inflammatory diſpoſition.

A rational practitioner ſhould always get acquainted with the cauſes of the diſeaſe, whether prediſponent, or exciting, in order to direct him to the beſt means of cure; next to bleeding, or perhaps before it, the ſtate of the firſt paſſages ſhould be taken into conſideration. It will generally be neceſſary to begin the treatment by giving an emetic in the evening, and after it has operated once, to order a pint of warm water, or an infuſion of camomile flowers, which may be repeated every time it operates. And as ſoon as the emetic is done operating, the patient ſhould get into bed, and wrap himſelf cloſe in the bed clothes, in order to promote a perſpiration. And by that univerſal ſympathy which prevails between the ſkin; and the ſtomach, and inteſtines, and other viſcera of the lower belly, to cauſe a derivation of the humours from the inteſtines to the ſkin. This is a circumſtance of the greateſt conſequence in all diſeaſes of the ſtomach and inteſtines, and more particularly in this diſeaſe, and ſhould at all times be kept in view, through the whole courſe of the treatment. But although emetics are generally proper in the beginning of this diſeaſe, there are caſes in which they are improper, as where there is a great degree of irritability about the ſtomach, and a diſeaſed liver; for this being the ſituation of the patient, vomiting would do far more hurt than good, by increaſing the irritable ſtate of the ſtomach, and communicating that diſpoſition along the biliary ducts to the ſubſtance of the liver, by ſympathy; and by the agitation of vomiting, as we can ſee by the increaſed ſecretion of bile, cauſed by ſtrong emetics, this might be productive of bad conſequences, as we are perſuaded it has often been, by either cauſing a ſimple obſtruction of the liver to degenerate into an impoſthume, or by the burſting of ſmall ones, which might be otherwiſe diſſipated by abſorption, which we have ſufficient reaſon to think they often are. In caſes of this nature, it would be better practice, to truſt to mild laxatives, as the neutral ſalts, particularly rochel ſalts, (ſoda tartar.) or vitriolated tartar, (kali tartar) glaubers, or epſom ſalts; as theſe evacuate the firſt paſſages, without cauſing any great commotion in the parts, but are rather of a ſedative cooling nature: and even where emetics are inadmiſſible, theſe purgatives are abſolutely neceſſary, in order to carry off the acrimonious contents of the inteſtines; or caſtor oil, (oleum ricini) is an excellent purgative, eſpecially where the griping, and pain of the inteſtines is ſevere; it anſwers very well as a purgative at any time of the diſeaſe —it may be made more agreeable, by a drachm or two of compound tincture of ſenna, or ſuch like tinctures; and as the neutral ſalts are very diſagreeable to moſt people, they may be made leſs ſo, by a little lemon juice, or vinegar, or acid of vitriol, and ſoft ſugar, or molaſſes.

All through the cure, a perſpiration ſhould be promoted by the warmth of the bed, and warm diluting drinks, and antimonials; theſe, when their united actions are joined together, are apt to produce a diaphoreſis, and turn the impetus of the fluids from the interior, to the external ſurface, or turn the vital energy outwards. For antimonials, although powerful diaphoretics, yet when the patient is expoſed to cold air, after their uſe, and before they have had time to operate by perſpiration, are turned upon the ſtomach and inteſtines. They are very apt to cauſe a vomiting, or griping, by being repelled from the ſurface, together with the inſenſible perſpiration, and the conſtriction of the external parts by the cold, being communicated to the ſtomach and inteſtines, and by them to the other contents of the belly. But the pain and uneaſineſs cauſed by the diſeaſe, is generally ſoon relieved, after a perſpiration is promoted, if this can be accompliſhed.

Although ipecacuanha is a mild emetic, yet in the early ſtages of the dyſſentery, its utility is doubtful, and that upon account of a property for which it was formerly much extolled, as univerſally uſeful in this diſeaſe; we mean the aſtringency which it commonly leaves in the inteſtines, after its operation is over; for any thing of an aſtringent nature, is to be avoided as very pernicious, in the early ſtages of the diſeaſe, whilſt the feveriſhneſs runs high, or there are any acrid matters to be evacuated; and although this may appear to be an uncommon doctrine, it is nevertheleſs true. Antimonial emetics, therefore are preferable, or at leaſt, a grain or two of tartar emetic ſhould be mixed with ten grains of the ipecacuanha; for this, by its laxative quality, will prevent the worſt effects of the ipec. when it is uſed.

Whilſt the pain and feveriſhneſs continue obſtinate, laxatives of the neutral ſalts, or caſtor oil, which is a medicine of the greateſt importance in this diſeaſe, ſhould be repeated every ſecond day at fartheſt; or where the ſymptoms are urgent, with violent griping, they may be taken in ſmall quantities every day, ſo as to keep the paſſage gently open, through the inteſtines, and ſmall, or frequently repeated doſes, are preferable here to larger ones, as they anſwer the purpoſe of evacuating the acrid, contents of the inteſtines, and keep the paſſage open; preventing painful ſtrictures without raiſing any commotion in the ſyſtem, which in this ſtage of the diſeaſe muſt neceſſarily be attended with diſagreeable conſequences.

The drinking plenty of warm diluting fluids, as gruel, rice, or barley water, freſh broth, or whey, are peculiarly uſeful, in the early ſtages of the diſeaſe, and they ſhould be taken frequently; but cold drinks ſhould be avoided, although they are frequently deſired by patients, in this diſeaſe; yet until the violence of the malady is over, the patient ſhould not be permitted to indulge himſelf in this reſpect.

As to the choice of the different preparations of antimony, in this diſeaſe, or any other feveriſh indiſpoſition, if we wiſhed to cauſe a vomiting, or give antimonials with that intention, we ſhould chooſe theſe preparations of this mineral, which are already in a ſtate of ſolution: as the antimonial wine, or ſuch of the ſolid preparations of it are the moſt eaſy of ſolution, as emetic tartar, which being a combination of the active reguline, or metalic part of the antimony, combined with the acid of tartar, forming a ſpecies of ſalt, or vitriol of antimony, which is very eaſy of ſolution in the ſtomach, and both ſpeedy, and certain in its operation, as an emetic.

But where there is a great degree of irritability preſent in the ſtomach, it might be dangerous to increaſe it by vomiting; and there is a neceſſity for giving an antimonial as a febrifuge, to promote a perſpiration, and gently to evacuate the inteſtinal tube, and at the ſame time to excite the delicate veſſels, and the abſorbents. For this purpoſe both reaſon, and experience dictates to us, to uſe thoſe preparations of this mineral which are ſloweſt of ſolution, and yet are certain in their effects when properly exhibited. Such preparations we have in the antimonial powder of the London diſpenſatory, or the Kermes mineral of the French Pharmacopeia's: both theſe are medicines of undoubted efficacy, in moſt ſpecies of febrile diſeaſes, in lowering the fevers, and alleviating the morbid diſpoſition; but at the ſame time their operations are to be promoted by the warmth of a bed, and warm diluent drinks, ſuch as mentioned above; and alſo warm bathing, particularly of the feet; and they will rarely fail of lowering the fever, although they ſhould produce no ſenſible excretion in any way, in the courſe of ſix, or eight hours after their exhibition. The uſual hour of going to reſt, is the moſt eligible time to take theſe febrifuges, as there is then a natural tendency to reſt, and perſpiration; but in caſes of urgent neceſſity, about five grains of the antimonial powder may be exhibited every ſix or eight hours, until it has produced its effect, keeping the patient warm in bed at the ſame time; ſometimes however, it will not produce the deſired effect—when there are great irritability, and feveriſhneſs, and a dry conſtricted ſkin; in this caſe warm fomentations, or the warm bath, will greatly aſſiſt, and promote its operation, by relaxing and ſoothing the external ſurface, and removing the ſtricture from the ſkin. And in ſome obſtinate caſes, it may be neceſſary to have recourſe to laudanum, or opium; but this drug is not to be uſed in the beginning, or height of a dyſſentery, without the moſt urgent neceſſity; for at theſe times it always leaves bad effects after its uſe, unleſs care is taken to prevent them by adequate means, as we ſhall deſcribe hereafter. For we have ſeen the worſt conſequences follow from the uſe of it: not only in true dyſſenteries, but in diarrheas coming on in fevers, being reſtrained by it: where tumefaction of the abdomen, and death was the conſequence in a few days. Here the lax was no doubt the critical diſcharge of the fever; but there is ſomething of the ſame nature in every dyſſentery, which ſhould not be reſtrained until the fever is firſt cured; and then theſe medicants may be uſed with more ſafety, and even advantage; and ſo may aſtringents, and ipecacuanha, beſides the aſtringent properties which it poſſeſſes, produce another effect, no leſs hurtful in this diſeaſe, that of cauſing a teneſmus in ſome people; and this alone is a ſufficient reaſon againſt its uſe here; and on the ſame account, it is ſcarcely neceſſary to mention that all ſorts of ſtimulant, and draſtic purgatives, are very improper: as calomel, jalap, ſcamony, aloes, ſenna, &c. and alſo rhubarb, although too frequently, and even indiſcriminately uſed, by the ignorant; as well as by ſome medical men, who ſhould know better, in ſome inſtances. For as the inteſtines are extremely irritable in this diſeaſe, theſe ſtimulant purgatives readily cauſe violent commotions, and increaſes their actions which are already over great, and by this means increaſe the violent pain, griping, and teneſmus, with ſpaſmodiac ſtrictures, and excretions, by their action upon the very ſenſible coats of the inteſtines. As they are ſoon, when in this ſituation, deprived of their native mucous lining, or cover; as explained elſewhere; and are therefore undefended, and expoſed to the acrimony of their contents.

Where great ſymptoms of irritability prevail, with reſtleſſneſs, and want of ſleep, a ſmall opiate, may be given at bed-time, taking care at the ſame time to order a mild laxative, for the next morning, to clear the inteſtines from the accumulated fœces; which are collected by the inactivity which it cauſes—for if this is neglected, the pain, and irritation will return with increaſed violence. On this account it would always be beſt, where they can be diſpenſed with, not to uſe opiates, eſpecially in the early and inflammatory ſtages of the diſeaſe, for here they are always dangerous, and often pernicious; but towards the latter end of it, when the inflammation and feveriſhneſs is gone, and the increaſed ſecretion is kept up by irritability, and a weakened, and relaxed ſtate of the inteſtines, the opium as well as rhubarb, may be very uſeful, and ſhould be given. And even aſtringents and ſtrengthners, as bark, the extract or decoction of logwood, ſimaruba, or even allum, or catechu; but theſe are to be uſed with great caution, &c. in the beginning of the diſeaſe, when attended with febrile ſymptoms, it ſhould be treated nearly the ſame as a fever.

The indiſcriminate uſe of rhubarb, opium, and aſtringents, have been cauſes of much unſucceſsful practice; and have often haſtened a fatal termination in this diſeaſe, and are yearly the cauſe of many thouſands of deaths, in different parts of the world. From a ſuperficial view of the diſeaſe, the diſcharge from the bowels is ſuppoſed to cauſe all the other ſymptoms, whereas it is only a conſequence of the original affection—but this happens in the ſame manner as bile, was thought to be the cauſe of ſome fevers; where from the irritation communicated from the inteſtines along the biliary duct; it has either appeared on the ſkin, in the ſtomach, or has been carried downwards, by its ſecretion being increaſed, and ſometimes its courſe interrupted.

Notwithſtanding ſome judicious practitioners (in particular Dr. Baker,) have taken notice of the bad effects of rhubarb, opium, and aſtringents in ſome ſtages of dyſſenteries; they are yet very much uſed by common practitioners, in all ſtages of the diſeaſe—a large volume would not ſufficiently expoſe the evils which they have been the cauſes of. But theſe medicines have been ſometimes known, in caſes of a ſlight lax, unaccompanied with fever, to bring about a cure; and likewiſe in ſome old caſes, after all the feveriſh, and inflammatory ſymptoms are gone, they have been uſed with propriety. However, as it happens with many people; to get a name for the diſeaſe, and the name of a remedy which has ſucceeded in a diſeaſe of the ſame name this is all they want—they then preſcribe at random, regardleſs of the preſent ſymptoms, or the patient's habit of body; and many other things, which a prudent phyſician finds of the greateſt conſequence, in directing him to a ſucceſsful method of practice. But as the ſtudy of medicine does not univerſally confer ſagacity, we cannot expect that others in general, ſhould be much wiſer, in that reſpect. So that it often happens when ſome very officious perſons go to viſit their neighbours, perhaps in the beginning, or height of a true dyſſentery, and they have heard of ſome medicines of the foregoing claſs ſucceeding in an obſtinate dyſentery, after many other things had been tried in vain, and conſequently the diſeaſe well over; they will not heſitate to preſcribe the ſame things in the height, or acceſſion of the diſeaſe. Which if they do not cauſe death, excruciating pains of the inteſtines will ſucceed. We wiſh it was in our power, to clear all thoſe who live by the practice of medicine, of falling into the ſame errors—but it is on ſome occaſions too obvious, to attempt to draw a veil over it, eſpecially among children, with whom this diſeaſe is epidemic every ſummer, in all the large towns of the United States. So that of thoſe who die under three years of age, one half die of diſeaſes of the inteſtines alone—and next to infectious fevers, they merit the moſt accurate inveſtigation, both in children and grown perſon.

It is many years ſince we firſt obſerved, that opiates, rhubarb, aſtringents, or bark, when given in the increaſe, or height of dyſſenteries, always rendered the diſeaſe worſe, the pain more ſevere, and heightened the fever after their uſe—the ſame may be aſſerted of wine, ſpirits, or cordials. They are therefore in theſe ſtages of the complaint to be avoided, as pernicious.

Therefore, in the acceſſion, and height of the diſeaſe, there is no mode of treatment preferable to promoting a perſpiration, by giving antimonials in the evening, particularly the antimonial powder, with warm diluting drinks; as water-gruel, barley, or rice-water, whey, warm milk, &c. and keeping warm in bed, in order to promote a perſpiration. For the conſent between the firſt paſſages, as the ſtomach; and inteſtines, and the ſkin, is ſo great, that a diaphoreſis generally eaſes their complaints at once.

It was formerly ſuppoſed, that the irritation, and inflammation, in this diſeaſe, began in the ſtomach, and extended down the inteſtines to the fundament; and there generally appears to be ſome reaſon for this idea. For the ſtomach is generally affected, moſt at the beginning; and afterwards, there is apt to be great irritation about the rectum, which is ſometimes communicated to the neck of the bladder, cauſing a troubleſome teneſmus; or frequent and fruitleſs inclinations to go to ſtool—and in the neck of the bladder, a dyſſury, and frequent inclination to make water, on account of the vicinity and ſympathy of the neck of the bladder with the rectum. There is nothing gives more effectual relief in theſe caſes, than oily and mucillaginous injections; to which may ſometimes be added, a drachm or two of laudanum. Warm fomentations to the abdomen, are of great uſe, in caſes of great internal pains of the bowels, or even fomentation to the feet, or ſemicupium, by making the patient ſit in a tub of warm water, as it is a powerful antiſpaſmodiac, and allays morbid irritability. We have known excoriations, and troubleſome ſmarting pains about the fundament, cauſed by the frequency, and acrimony of the diſcharge, very much relieved by the external uſe of laudanum on lint, or linen rag, frequently repeated—ſome, or all of theſe, may be neceſſary occaſionally.

If the dyſſentery has been properly treated in the beginning, it is ſeldom dangerous or difficult of cure; ever ſince we became well acquainted with the improved mode of treatment, we have always conſidered it, as a very tractable diſeaſe; and we have ſeen it in the different quarters of the world. But the worſt ſpecies of it which we have ever ſeen, was on the weſt coaſt of Sumutra, in the year 1784—5, being my firſt voyage to the Eaſt Indies, in the Royal Charlotte; it was the firſt ſevere diſeaſe which attacked myſelf in India, having then but little practical knowledge of it. We found the elementary inſtruction, which we had received, and the modes of practice which we had ſeen; and the moſt approved practical authors, then extant, to my grief ſtill deficient; it was therefore found there was much want of further improvement, in the manner of treating this deſtructive malady. Dr. Clark had about fourteen years before that, publiſhed his book on the diſeaſes of Europeans in hot climates. But although it was an improvement upon any that had been known before; eſpecially on dyſſenteries and remittent fevers, we found there was much room for improvement left, by this reſpectable writer, on the diſeaſes of India voyages—in the treatment of theſe diſeaſes, and much more in that of hepatitis: a diſeaſe which he paſſes over very ſlightly.—Therefore a knowledge of the animal economy, and of the operations of medicines, are very neceſſary in making the beſt uſe of his works, as well as thoſe of many others—for the better any one is acquainted with the preliminary, and auxiliary parts of medical ſcience, they are the better qualified to reap advantage from practical authors; as well as from their own obſervations in practice.

Towards the decline of the flux, the treatment may be very different from what is requiſite in the foregoing ſtages—the bark, and wine may then be uſed to advantage. And opiates, eſpecially dovars powder, may anſwer well, if no violent pains of the bowels, or teneſmus troubles the patient, rhubarb may then be a very proper purgative, to clear out the inteſtinal canal. And alſo by its aſtringent, and ſtrengthening properties, it helps to put a ſtop to the frequent evacuations, which often remain long after the violence of the diſeaſe is overcome; in the ſame manner as a diſcharge from any of the mucous membranes, remains long after the irritation which produced it is gone; as we frequently ſee happens in the diſcharge from the noſe, after having got a cold, or of the urethra, from gonorrheas. There has ſometimes been ſuch quantities of coagulated lymph diſcharged, in the form of membranes, in the early ſtages of fluxes, and in the ſame ſhape of the inteſtines which they lined, that they have ſometimes been ſuppoſed it to have been portions of the inteſtines themſelves, but that never is the caſe ; neither are they ſo often ulcerated as has formerly been imagined, though they ſometimes are.

This diſeaſe has ſometimes been met with in a chronic form ; but from my having ſeldom known it run out to a great length of time, when properly treated, we believe it is a caſe which ſeldom occurs, and when it does, we believe that it is generally accompanied with ſome other diſeaſe of the abdominal viſcera, as ſchirrous liver ; indurations of the meſſenteric glands, or pancreas. But whatever be the real cauſe of it—there is nothing oftener ſucceeds in theſe obſtinate caſes, than calomel, in ſmall and repeated doſes. When treating of the hepatitis, we have conſidered the uſe, and abuſe of mercurials in that diſeaſe. This we conſider as indiſpenſably neceſſary, and becauſe of the great dependance which has been put upon it in that diſeaſe—it has been too indiſcriminately, and improperly ventured upon, in this alſo. It is one of thoſe edge tools of medicine which never ſhould be handled, unleſs with the greateſt caution, even by thoſe who are well acquainted with its operations, and the effects which it and other powerful medicines produce on the human body.

The ſummer diſeaſe of children, whether they appear in the form of cholera's, diarrheas, or dyſſenteries, are very alarming affections, in all the large ſea-port towns of the United States, in the ſummer. And from the repeated deſtruction which they cauſe among children yearly ; they merit the greateſt attention, and the moſt ſerious inveſtigation of medical gentlemen ; and the more ſo as they are often invincible by all their efforts.

Theſe diſeaſes commonly firſt appear, when the ſummer heats have arrived at their greateſt height, in June and July, and continue more or leſs violent until September ; and are commonly in proportion to the heat, and moiſture of the weather ; being worſt in thoſe years when there are great, and long continued heats, accompanied with frequent rains, and moiſture of the air, the nights being cold. Children are always ſeized with theſe diſeaſes, earlier in the ſeaſon than adults, owing to the greater weakneſs, and irritability of their habits. They are on this account more ſuſceptible of impreſſions from without, by the coldneſs of the evenings, ſucceeding warm days, &c. the obſtruction of perſpiration, from expoſure to the evening, or morning air, and moiſture, which affects the ſtomach, and inteſtines, by ſympathy with the ſkin.—And probably the drinking of cold water, may affect their delicate frames in the hot weather—a defect of pure country air, appears to be a principal cauſe, as children in the country are ſeldom ever affected in the ſame manner.

The heat is known to be much greater in towns, than in the country, and the air leſs pure; and children are apt to get leſs exerciſe, and to become more delicate, and ſenſible of impreſſions, from food, drink, or air. And the cuſtom ſo prevalent, of ſitting out of doors, expoſed to the evening air, may be a very common cauſe of this diſeaſe with children; for then after the heat of the day, perhaps falling aſleep in their nurſe's arms, muſt cauſe a torpor of the ſkin, and abſorbents, all over the body, and cauſe a ſlight feveriſh ſtate; and the ſtomach being always liable to ſympathize with the ſkin, muſt in conſequence thereof be firſt affected, and become irritable. And the inteſtines, next are affected, from their ſympathy with the ſkin and ſtomach; and from the inteſtines, the biliary ducts are readily affected in the ſame manner. And hence the large ſecretions of bile, which, added to the irritable ſtate of the ſtomach, and inteſtines, cauſes the ſudden vomitings, and diarrheas—which, when it comes on ſuddenly, and with great violence, is in fact a cholera, cauſing both vomiting, and purging. By the ſtomach and inteſtines being both in violent action at the ſame time, and the redundancy of bile promoting it, by getting into them both in too great quantities; this ſtate is accompanied with a feveriſhneſs, and quick pulſe. In this variety of the complaint, warm diluent drinks ſhould be uſed, frequently: as water gruel, freſh broth, barley water, or warm milk, and warm bathing at firſt, with ſmall doſes of caſtor oil in the morning, and a grain or two of antimonial powder, at night; and when the diſeaſe is obſtinate and violent, ſmall doſes of opiates may be frequently repeated, giving next morning a drachm or two of rochel ſalts. The warm bath is very proper, or warm fomentations to the belly, and keeping the ſkin warm by lying in bed to promote a perſpiration.

But in caſe the diſeaſe ſhould not aſſume theſe violent ſymptoms at firſt, but appears in the form of a common diarrhea, or dyſſentery, with feveriſhneſs, it is to be treated in a different manner. As it ſhould likewiſe after the appearance of cholera is over, if a purging ſhould remain, with griping pains of the bowels, and feveriſhneſs, then it ſhould be treated as a dyſſentery, with febrifuge medicines and regimen, taking care to avoid opiates, rhubarb, or aſtringents, while theſe ſymptoms are preſent; for they would aggravate the diſeaſe, by pening up the offending matter in the bowels, and raiſing the ſymptoms higher, &c. If the diſeaſe of the inteſtines appears only in the form of a ſimple purging, or, having been attended with the other ſymptoms before enumerated, and they are gone off, then rhubarb may be admiſſible, with magneſia, eſpecially if there are any ſymptoms of acid abounding in the firſt paſſages, as is often the caſe with children, at any time of the year; and a drop or two of laudanum may be uſed, if it continues obſtinate. But we muſt again caution the preſcriber to be very cautious in the uſe of either of theſe remedies. But when children are under this genus of affection in their inteſtines in the ſummer, or autumnal ſeaſons, they very often degenerate into true dyſſenteries, either with or without ſanious diſcharges. But the diſeaſe is often as bad, either in adults or children, when the diſcharge is only of a white mucous appearance, as when tinged with blood or ſerum; for the mucus is often diſcharged from the inflamed ſurface of the inteſtines, and indicates an inflammation to be preſent, as certainly as when ſerum is exuded from them: although the ſerous or bloody appearance ſhews it to be farther advanced, and to affect the ſmall blood-veſſels of the inteſtines, either of the arteries, or veins. This ſtage of the complaint, is generally accompanied with a feveriſhneſs, and great pains of the bowels, and often with a teneſmus; and theſe are in every caſe, the moſt proper characteriſtic ſymptoms of a dyſſentery, and ſerves to diſtinguiſh it from a diarrhea, in particular, in every age and ſex. It is at preſent a practice, but over common with ſome deſcriptions of perſons, in theſe caſes, to have recourſe to aſtringents, and opiates, in the dyſſenteries of children. Some think the pains, &c. are cauſed by worms, becauſe perhaps they have ſeen ſome diſcharged; and others regardleſs of the ſymptoms of fever, or pain, thinking if they can ſtop the flux, that all will be well; have immediate recourſe to the ſtrongeſt aſtringents, and opiates, and according to a common phraſe, ſhut the door with the thief inſide, ignorant, or regardleſs of the bad conſequences of ſuch proceedings, which they muſt often perceive.

The mode which we have ſeldom ever found to fail, if applied to in theſe caſes in time, that is before the inflammation was raiſed to a great height, or a mortification of the inteſtines had taken place, is in general as follows: if there is not much irritation at the ſtomach, a gentle emetic may be given at firſt, keeping the child in bed after it, ſupplied with warm drinks, in order to promote a perſpiration, and one or two grains of the antimonial powder, every night whilſt any feveriſhneſs remains, and repeated once or twice a day, and every ſecond day, a little caſtor oil, occaſionally, or a ſmall doſe of ſal. rochel; and if there is much ſtraining attending their evacuations, injections are uſeful, for the teneſmus, and the warm bath, warm fomentations, and warm drinks, and promoting a perſpiration by lying in bed.

This is the method of treatment which we found moſt ſucceſsful, in the dyſſenteries of children; but particular indications muſt be obviated by particular remedies. When an acid appears in their ſtomachs, magneſia, particularly the calcined, is the moſt ſafe, and effectual abſorbent to neutralize it—this preparation being about double the ſtrength of the common magneſia, half the weight will be a full doſe; it is naturally a mild medicine. This preparation alſo has a tendency to abſorb the air, which being extricated in the firſt paſſages of weakly children, often cauſes cholicky pains, by being pent up in the bowels; but we muſt caution againſt the too common uſe of rhubarb with it, although often given together; for in the beginning and height of the diſeaſe in children, it is attended with all the bad conſequences in them, that it is in grown perſons. And likewiſe the cautions againſt opiates, and aſtringents, are fully as neceſſary, or more ſo, with reſpect to children than to adults; as their tender organs are ſo very ſuſceptible of all impreſſions, that it is ſcarce poſſible to be over cautious, in the uſe of any of theſe articles with reſpect to them. Although many well thinking matrons, miſled by bad authorities, in theſe caſes, ſacrifice the lives of many poor children every year: for their phyſical reaſoning ſtops at the ſurface, not knowing enough of the nature of the diſeaſes and remedies, by an ill directed kindneſs, in making over free with medicines and conſtitutions, which all their practice cannot teach them to underſtand ſufficiently; but we muſt excuſe them as far as poſſible in theſe miſtakes, as good guides in theſe matters, have been very ſcarce.

It is a practice too common with nurſes, when children are taken with pains in their bowels, their feelings of which they expreſs by crying, and drawing their knees up towards their bellies, to immediately have recourſe to ſome infallible noſtrums; which are commonly ſold ready prepared by apothecaries, under the names of cordials, confections, elixirs, tinctures, &c. in which opium, and ſtimulant ſubſtances are always the principal ingredients: in ſome caſes theſe cordials and carminatives, expel air from the inteſtines, and the opium, when a child is worn out with pain and crying, cauſes ſleep; but at the ſame time, there are ſcarce any other two ſubſtances in the whole materia medica, of more dangerous conſequences in theſe caſes; for the ſtimulant ſubſtances are certain to cauſe inflammation, if there is any diſpoſition to it preſent; and at the ſame time, the opium lulls them into a deceitful kind of forced reſt, and ſhuts up the offending acrimony in their inteſtines, the conſequence of which is ſo often pernicious. There are other methods, by which we might come more ſafely, and certainly, to our purpoſe; which, although it may be a little longer in giving immediate relief, it will not cauſe death.

The analogy of this ſpecies of diſeaſes in adults, may be frequently applied to thoſe of children, as whatever is either uſeful, or hurtful in the one, muſt generally be ſo in the other, in ſome degree; therefore a careful peruſal of what is ſaid already on this ſubject, is adviſed with reſpect to the ſummer diſeaſes of children, making all due allowance for the difference of age, ſtrength, irritability, &c.

As we cannot find out by inquiry, the diſeaſes of children, otherwiſe than by their cries, and the drawing up of their thighs, and knees to their bellies, when they are in violent pain; unleſs there is much irritability preſent, the moſt ſafe and ſpeedy relief, will be obtained by giving a gentle emetic of a few drops of a ſolution of tartar emetic, or two or three grains of ipecacuanha, or the tincture of it in wine; a dram of tartar emetic may be diſſolved in an ounce of water, and then eight or ten drops of it will contain a grain of the powder. This might be kept ready prepared in families; but it has ſome inconveniences, as it ruffles the conſtitution, and a frequent uſe of it weakens the ſtomach. But caſtor-oil, or oil of almonds or olives are not ſubject to any of theſe inconveniences. In caſe children can be brought to ſwallow them, there is no other purgative more proper for them, eſpecially where they are very irritable, for theſe oils open their bowels gently, and expel the acrid matter from them; and ſoothe and allay pain and morbid irritation, and even appear to poſſeſs anodyne, or ſedative powers; after the purgative operation is over; and never conſtringe, or leave a coſtiveneſs behind, or griping pain, like rhubarb. The oil may be given to children mixed with ſugar, molaſſes, or powder of liquorice—in theſe ways it may be eaſily taken by them. The pernicious cuſtom of giving ſpiritous cordials to children when the pains of their bowels are urgent; which are ſo apt to cauſe weakneſs, ſcirrhous livers, and deprave all the animal function in grown perſons; will beyond all doubt, be followed with as bad conſequences in infants, in whoſe ſtomachs nature ſhews us, that even a ſubſtance ſo mild as milk, is ordinarily ſtimulant enough for their common food, even in health. Sometime paſt having been conſulted for a child of eighteen months old, in a very bad dyſentery, which had been of ſeven days duration; the child had been in violent pain, accompanied with frequent evacuations, and the fever high, and the patient worn out and reſtleſs, wiſhing to know how it had been treated? They ſhewed me two vials, in one of which there was eſſential oil of caſſia; in the other there was a ſolution of allum with laudanum, to anſwer the double purpoſe of ſtopping the purging and the pain; but unfortunately for the poor child, neither of theſe intentions were anſwered: whilſt the fever and inflammation, which run very high, were totally neglected. As the caſe appeared deſperate, a mortification of the inteſtines was doubted; and a different plan of treatment was therefore ordered; ſmall doſes of the antimonial powder, every ſix or eight hours, with warm drinks and warmth of bed, and a warm bath was ordered to be uſed once or twice in twenty four hours. What was remarkable, ever from this was begun, the violent pain and fever abated; but the diſeaſe had been too far gone before; and the child departed the ſecond day, without any more violent fever, or pain, which ſhewed that the inteſtines muſt have been in a gangrenous ſtate before; or otherwiſe the pain would not have diſappeared ſo very ſuddenly, and not returned.

We have ſometimes obſerved young children, two or three days after their births, attacked with a ſpecies of cholera, from the retention of the meconium; which in theſe caſes appears to cauſe violent irritation, and frequent evacuations, both upwards and downwards, accompanied with the appearance of violent pain. For this affection we have found nothing more efficacious than warm baths, and a tea-ſpoonful of oil of almonds occaſionally; and keeping the little patients warm—the oil given in time, in order to evacuate the meconium, commonly prevents this accident.

The lientery, or that affection of the ſtomach and inteſtines, wherein the food and drink appears to be diſcharged by ſtool, ſoon after it is taken, appears to be cauſed by a weak irritable ſtate of the ſtomach and inteſtines, accompanied with laxity and mobility. This ſtate of the alimentary canal ſometimes ſucceeds obſtinate diarrheas, or dyſenteries, as we have on ſome occaſions obſerved. But we believe it is ſeldom a primary diſeaſe, or unconnected with one or the other of theſe; after their painful, and inflammatory ſtages are gone off; and the inteſtines are left in a weak and over ſenſible ſtate; they are eaſily irritated by their contents, from having loſt their natural mucous lining, by the preceding diſeaſe: their undefended interior coats being expoſed to whatever is paſſing through them. This complaint commonly goes under the name of the primary diſeaſe, which it ſucceeds; and in reality, it appears to be only a variation or ſymptom ſucceeding to them—but here as in other diſeaſes, the firſt conſideration is to find out the cauſe of the malady, and its mode of action upon the body; and then we may have ſome hopes of applying a rational method of cure—but whatever is attempted without this knowledge, is evidently empyriciſm.

In this diſeaſe any thing taken into the ſtomach, either food, or drink, gives a ſtimulus to it; which is continued down through the whole length of the alimentary canal; and by this means promotes the ſudden evacuation of their contents, by the ſtimulus given by that which follows, and this laſt remains until it is protruded by the next ſucceeding, and ſo on.

From this account of the cauſe of the lientery; we would naturally conclude, that mucillaginous food, ſuch as ſoups, jellies, ſago, and tapioca, &c. are the moſt proper; they being both nouriſhing, and having a tendency to ſupply the inteſtines with their natural mucous covering, and do not cauſe any great degree of irritation of the ſtomach; ſtrengtheners, may be uſed at the ſame time, to reſtore the natural tone of the parts; as chalybeats, bark in decoction: for the powder cauſes an increaſed irritation ſometimes in theſe caſes. In diſeaſes of this genus opiates may be uſed to allay the irritability of the inteſtines; aſtringents, likewiſe, may here be given with ſafety, and advantage; and in caſe any purgative may be thought neceſſary, in order to evacuate the contents of the inteſtines, and leave an aſtringency after it, rhubarb anſwers very well. For after its operation is over, by its aſtringency, the inteſtines get time and opportunity to recover their former ſtrength.

The cholera morbus being a ſudden, and violent affection of the ſtomach, and inteſtines, accompanied with vomiting, and purging; it is one of the moſt acute, and rapid in its progreſs, of all thoſe diſeaſes which attack the human body; and ſooner reduces it than any other known at preſent, from a ſtrong, to a weakly condition. The cholera is moſt frequently cauſed by getting cold ſuddenly, after the body has been over-heated; by the cold ſuddenly conſtringing the external veſſels, and rendering them torpid. Alſo ſudden emotions of the mind, ſuch as terror, or frights are active cauſes of it; for the fluids are cauſed to ruſh inwards upon the interior veſſels, where the warmth is at all times nearly equal—and the vital energy is directed to theſe parts alſo, as it is repreſſed externally, &c. and cauſes a temporary inflammation; or gives an extraordinary ſtimulus to the parts; and the action of the interior veſſels is increaſed; and in conſequence of this, the veſſels of the liver, being the moſt lax, and weak, in proportion to their capacity, will be diſtended with blood, as it returns from the inteſtines; and this of conſequence ſtimulating the liver, a greater quantity of bile will be ſecreted. Beſides the blood-veſſels of the inteſtines being likewiſe diſtended, they aſſume an inflammatory ſtate, from the overcharge; the liver is irritated, by conſent with the other parts—and by that means ſtimulated by the branching, of theſe veſſels through its ſubſtance. This diſeaſe happens moſt frequently in the latter end of ſummer, or autumn, when the weather is variable, with cold nights ſucceeding hot days.

We cannot conceive that fruit could in any other manner cauſe a cholera, than by their roughneſs, and acidity, ſtimulating the inteſtinal canal. In this manner they often cauſe a gentle lax—but the prediſponent cauſes in this diſeaſe, appears to be the preceding heat of the ſummer, by which the external ſurface is relaxed, and the habit of body weakened, and rendered more ſuſceptible of the effects of impreſſions from without. So that whenever cold is ſuddenly applied to the exterior ſurface, whilſt in this ſtate, it acts with great force on the inteſtines, ſo that they are thrown into alternate convulſions, returning at ſhort intervals, and diſcharging their contents, both upwards and downwards.

From what is ſaid of the cholera, we ſhould be partly inſtructed in the method of cure. The patient ſhould be plentifully ſupplied with warm diluent drinks, as water gruel, rice, or barley water, &c. and warm bathing, often repeated, and ſmall quantities of opiates, may be interpoſed at intervals, to allay the irritability of the ſyſtem, and the commotion of the bowels. But as the interior parts are commonly overcharged with blood from the irritation, bleeding is generally neceſſary at the beginning; and external warmth, by clothes wrung out of warm water, and applied to the pit of the ſtomach, with the ſaline draughts, &c. to allay the irritability.

When a purging comes without fever, and no violent pains in the bowels; it is only a diarrhea, and requires a different treatment from the dyſentery; it is very ſeldom dangerous whilſt it keeps this appearance—but ſometimes a dyſentery begins alſo, in this manner; and then it merits more ſerious conſideration, eſpecially if it appears at a time, and place, at which the diſeaſe is prevalent, for then it muſt be treated with more caution than common, leſt it ſhould degenerate into a dyſentery; which, alſo, in its decline puts on the appearance of a ſimple diarrhea; here it may admit of a different treatment, ſuch as is recommended in the latter ſtages of the dyſentery. There are ſome varieties of this diſeaſe ſo mild, as to bear being treated at their beginning, with rhubarb, and preparations of opium, and aſtringents—but before any of theſe are uſed, we ſhould be very certain of the innocent nature of the affection, otherwiſe they may be of the moſt dangerous conſequence, by ſhutting up the offending matter within, and thereby increaſing the irritation, and conſequent inflammation; and all the bad ſymptoms of the diſeaſe. The beſt manner we believe, in which a ſimple diarrhea can be treated, is by ſuch ſubſtances as firſt evacuate the inteſtines, and afterwards leave an aſtringency behind; of this nature is rhubarb—and ſmall quantities of ipecacuanha, and even ſea-water, has the ſame aſtringent properties, after its purgative operation is over; this is well known to moſt ſeamen, and others, who ſometimes uſe it. We have tried the experiment, in ſlight caſes of diarrhea; and it ſucceeded effectually. And as a ſimple diarrhea is to be diſtinguiſhed from a dyſentery, or bloody flux, by the abſence of fever, violent pain, and teneſmus, or irritation, about the fundament, with frequent, but fruitleſs ſtrainings. Theſe three laſt ſymptoms are the moſt diſtinct marks of the dyſentery. But between the genuine diarrhea, and the dyſentery, there are every poſſible intermediate variation; although in warm climates, the one commonly precedes the other, as we have repeatedly witneſſed. In the ſame manner as the different varieties of fevers are intermixed, ſo are the diſeaſes of the inteſtines, which we have deſcribed in this account of them; ſo that rather than attempt the labour, of deſcribing every poſſible variety, which evidently would be a work without end; it may anſwer better to delineate the commonly received diviſion, as accurately as it is in our power; and alſo to compare their relation to each other. For as there are real cauſes for all the varieties of theſe affections, whenever we can trace them out; ſo are there alſo in theſe which exceed our comprehenſion.

In a ſimple diarrhea, or lientery, rhubarb is a very uſeful medicine, as it clears out the inteſtines, and carries off the putrid ſaburra; and by its aſtringent properties, ſtrengthens the inteſtines againſt the diſeaſe. This is by no means an inactive, or uſeleſs drug; but like all other good medicines, it is very liable to be abuſed, by being miſapplied; and it is altogether as capable of doing hurt, as of doing good—its effects depend upon the times of its application; for in caſe there are any feveriſhneſs, or inflammation preſent, it ſhuts up the offending matter in the inteſtines, and increaſes the diſeaſe. We have long ſince obſerved the effects of rhubarb, in our own practice, and upon inquiring into the ſubject, we find the ſame obſervation has been made by ſeveral others: as Dr. G. Baker, Dr. Moſely, and Zimmerman adopts this opinion of it, in the latter part of his book; although he uſed it freely in the epidemic dyſentery, he deſcribes, at the beginning of it. He, like all the others probably had ſeen the bad effects of it, and learned caution by experience. We were led to this firſt by obſerving almoſt every one to whom we gave rhubarb, complaining the next day of violent pains in the bowels; the griping, and uneaſineſs, being always much increaſed by it. Rhubarb was firſt introduced into practice, as a ſtrengthener in the dyſentery, by Alexander Trallian: but not as a purgative.—For aſtringents and ſtrengtheners, were then, and long ſince looked on as the moſt efficacious medicines in this diſeaſe, and alſo in diarrheas—but as we are now well aware, that when given in the inflammatory ſtate of either; it is a very pernicious remedy, as may appear very evident by its ſtimulant, and aſtringent powers, acting upon the inteſtines, when they are already in an inflammatory ſtate, and afterwards confining, or ſhutting up the matter, which ſhould be evacuated: thus ſtimulating the inteſtines more violently—this is its common effect, when uſed indiſcriminately, by that deſcription of perſons, whom nature never deſigned, or qualified to judge, or act for themſelves: nor to diſcriminate the different ſymptoms, and indications in diſeaſes, and the effects of medicines upon them in particular, and upon the human body in general. But in this reſpect rhubarb is not ſingular, as every other article is miſuſed in the ſame manner. But the ſame properties which renders it hurtful in the inflammatory ſtages of theſe affections, renders it uſeful after that is gone; for then the ſtrengthening, and aſtringent properties, it is poſſeſſed of, helps to ſtrengthen, and recover the tone of the inteſtines, obviating the lax, and preventing the frequent calls to evacuate. For it always leaves an aſtringency after its operation is over; but in the ſlighter varieties of diarrheas, which are not accompanied with feveriſh, or inflammatory ſymptoms, it may be very well adapted to them, even at the beginning; but when it is ventured on, its effects ſhould be cloſely obſerved, leſt it ſhould do hurt.

Opium bark, and all other aſtringents, and anodynes, are applicable where rhubarb is admiſſible. But where any of theſe are uſed, their effects alſo, ſhould be cloſely ſcrutinized, that they may not increaſe any feveriſh, or inflammatory ſymptoms, or aggravate the griping pains, or teneſmus, after their operations are over. Alexander of Tralle, is alſo the firſt we can find, who remarked the bad effects of opium, and its compoſitions in the early ſtages of the dyſentery. He ſays it deceived thoſe who uſed it, by the patients ſleeping all night; and the frequency of the flux being ſtopped for the time; but the next day they always found the relief fallacious, and the diſeaſe worſe than before; for the humours being collected, were then expelled without intermiſſion; with a heavineſs of the head, loſs of ſtrength, and an increaſe of the flux. And upon all theſe accounts, he thought opiates ſhould not be given without great neceſſity—nevertheleſs it is my firm belief, that even opium, notwithſtanding all theſe pernicious effects, and many more not yet taken notice of, is leſs hurtful, in the increaſe or height of true dyſenteries, than aſtringents, and ſtrengtheners, as they have too often been uſed hitherto. For a liſt of aſtringents, as extenſive as nature herſelf, have been imprudently uſed in this diſeaſe; but although the claſs is very numerous, yet there are ſcarce one of them which has not been extolled as infallible, at one time or other; but without pointing out the times, and circumſtances, under which they are uſeful—Some of the bad properties of opiates are obviated by their general effects, as they remove ſpaſmodiac ſtrictures of the extreme veſſels, and thereby render them permeable. And it is alſo a prevalent opinion that they thin the blood, and thereby render it more fit to paſs through the veſſels—they alſo generally promote the perſpiration; and increaſe the circulation towards the ſurface of the body; and on theſe accounts, opiates are rather leſs hurtful than aſtringents are in this diſeaſe.

Here is a caſe of the dyſentery, which was treated in the old method: wherein the bad effects of the premature uſe of rhubarb, ipecacuanha, and opiates, are very evident. This was in my firſt voyage, when there were ſeveral others; where the treatment and ſucceſs were the ſame—being myſelf under this diſeaſe at the ſame time.

The Royal Charlotte, in Bencoolen Roads, December the 20th, 1784. The weather was warm and rainy, with frequent thunder and lightning. Mr. Radford, midſhipman, aged eighteen years, had been in the Weſt-Indies, before. He was of a thin, active conſtitution—before he applied for medicines, he had a purging, with pains of his bowels, for ten days; but being unable to do duty any longer, he applied for aſſiſtance—he had a purgative of the glauber ſalts, and barley water for his common drink—21ſt, the purging continued, but the griping was abated; he then had powders compoſed of rhubarb three grains, and ipecacuanha, one grain, every three hours.—23d, he appeared ſomewhat better, the purging abated; he continued the ſame powders, and he had an anodyne at night.—25th, the purging was more violent, with ſickneſs at ſtomach. Now he had an emetic, and the anodyne at night—26th, he was much the ſame; he now had antimonial powders, and the anodyne at night—27th, the purging and griping continued very violent; he now had boluſſes, of one ſcruple, of philonium, rhubarb two grains, and ipecacuanha, one grain, thrice a day—28th, the purging was worſe, and his pulſe was quick, and ſmall, and his ſtrength very much exhauſted; he had no reſt in the night; the boluſſes were repeated as before, he had Port-wine, to uſe in his barley water.—29th, the purging and griping the ſame; he had no appetite for any thing, but barley water, and water gruel; now he was ordered a decoction of the Peruvian bark, with Port wine. 30th, he complained of great heat, and pain of the rectum; his pulſe was ſmall and quick; he had an injection, with laudanum, and one powder as before, and an anodyne at night. 31ſt, he was ſeized in the night with a violent pain, and hardneſs in the lower part of the belly; he now had an infuſion of Senna, ſalts, and manna—this firſt vomitted and afterwards purged him; the diſcharge was black and offenſive.

January 1ſt, 1785. He had a reſtleſs night; the pain and hardneſs of the lower belly returned; bladders filled with warm water were applied to the part, which gave him ſome relief; and the teneſmus, as before was ſevere, with very frequent evacuations; he had two injections this day: likewiſe catechu, or earth of Japan, ten grains, and philonium, one ſcruple, this eaſed him for the preſent: but before mid-night the pain returned with great violence, and then he had a bliſter applied to the part—2d, he was very reſtleſs in the night, and faultered in his ſpeech, with frequent ſanious diſcharges; the injection was repeated, and the decoction of bark, &c. 3d, all the ſymptoms were worſe, involuntary ſanious diſcharges, of a very offenſive putrid ſmell; his pulſe was irregular, with a ſtarting of the tendons; he had the decoction of bark, with wine, and an anodyne at night. 4th, this morning he had loſt the power of ſwallowing, and at noon he departed.

Remarks. Here we ſee the diſeaſe approached very gradually; and this is the common manner in which we have always ſeen it proceed. The progreſs of the diſeaſe, and the advances of death were as regular, as any one could expect, although it was a very bad caſe of the flux; but the treatment was injudicious; though ſome indications were obviated, by proper remedies: yet the exhibition of opiates ſo early, and ſo conſtantly at night, was improper, and the more of them were uſed, we ſee the worſe were the ſymptoms which followed. The rhubarb and ipecacuanha, were alſo uſed prematurely; and their bad effect from their aſtringency ſoon followed. Had this young man been treated in a different manner, he might have recovered: firſt, by an emetic, repeated occaſionally, and then the caſtor oil, or the neutral ſalts, in order to have cleared the inteſtines of their acrid contents, with antimonials every night, in place of opiates; unleſs when the pain, and want of reſt was very diſtreſſing; and antimonials on the intermediate days. And ſometimes an ounce of caſtor oil, in place of the neutral ſalts, when the griping pains were ſevere; and when the feveriſh ſymptoms were overcome, and the patient left weak, with a frequent lax: then rhubarb might have been uſed to advantage, and likewiſe ipecacuanha, in caſe there were no teneſmus: as it often cauſes, or aggravates this troubleſome ſymptom—and in order to reſtore the ſtrength, bark in infuſion, or decoction, may be the beſt manner of giving it, becauſe when the inteſtines are very ſuſceptible from the diſeaſe, powders of any ſort, are apt to ſtimulate too much; and are therefore improper.

There is nothing in my opinion, can ſet an improper method of procedure in a ſtronger light, than thus pointing out the rocks on which others have periſhed; and as ſuch modes of treatment were lately, and are yet followed by many—we conſider it a duty we owe to ſociety, to advertiſe them of their danger; eſpecially as we can recommend a ſucceſsful practice, which is very different. We could give ſeveral other caſes of a ſimilar nature and method of treatment; in ſome of which calomel was uſed prematurely, upon a ſuppoſition that the diſeaſe was complicated with obſtructions, &c. in the liver, or other abdominal viſcera. But we can give full teſtimony againſt mercurials, in this diſeaſe, unleſs in caſes of long ſtanding; and this from ample experience of its pernicious effects, we ſhould not have thought neceſſary to even have mentioned this, did we not know, that ſome phyſicians, of ſome degree of popularity, recommend it rather indiſcriminately, in this, as well as other diſeaſes.

In confirmation of the practice here recommended, we can affirm that we have followed it theſe laſt fifteen years, in all ages, and ſexes, in the different parts, in which we have practiſed, and uniformly with the greateſt ſucceſs; ſcarcely ever loſing one, unleſs where there was ſome local diſeaſe in the viſcera. Ever ſince we acquired a rational knowledge of the diſeaſe, and of the operations produced by remedies, we have had ſufficient reaſon to conclude this, to be one of the moſt tractable of diſeaſes, and always a good ſymptom in other diſeaſes, if unattended with a hectic ſtate of the pulſe, in which it is always fatal.

July 10, 1790.—John Tucker, ordinary ſeaman, aged 19 years, never at ſea before, of a tender conſtitution, was taken with a pain in his bowels, a nauſe and ſickneſs of his ſtomach; he firſt had an antimonial, which was repeated at bed-time.—11. He was much the ſame; he had now glaubers ſalts one ounce, and the antimonial to be taken at night, as before.—12. The griping and purging, were much abated; but he complained of feveriſhneſs, and head-ache; tongue dry and furred, pulſe quick; went on with the antimonials, with warm drinks, with directions to keep warm in bed.—13. Gripings were troubleſome; he had caſtor oil one ounce, and the antimonial at night.—15. The pain of his inteſtines returned; he had a few drops of laudanum added to his antimonial at night.—16. He was much better, but weak; he had a little powder of bark with the tincture, and at night an antimonial, with ſome drops of laudanum.—17. He had a return of the pains of his bowels, &c. he had caſtor oil repeated, and at night the antimonial and opiate, &c.—18. He appeared to be tolerably free of the feveriſhneſs, but the purging continued; he now had rhubarb one ſcruple—it cauſed no pains after its uſe, all the inflammatory and feveriſh ſymptoms being gone before this time.—19. He recovered his health gradually, uſing a little bark, and wine and water for common drink; but at the height of the diſeaſe, warm rice water, to keep up a perſpiration, was paid particular attention to. From this he had no more any remarkable ſymptom, but recovered in a few days.

Here there was a different method of cure followed, from that of the former caſe, and with different ſucceſs. Here we abſtained from rhubarb, ipecacuanha, bark, or opium, until the inteſtines were well cleared, and the feveriſhneſs overcome, by its appropriate medicines; and then theſe ſtrengtheners and aſtringents were very proper, in order to carry off the remaining lax of the inteſtines; but had theſe been uſed early, this might have been a mortal caſe, as well as ſome others which we have formerly ſeen treated in that manner. We can with the more confidence recommend this method of treating the dyſentery, becauſe we have always met with the greateſt ſucceſs in following it, both at ſea and on ſhore, in warm and temperate climates, in Aſia and America, with little variation in the mode of treatment; and in children, as alſo in females, and adult males, we can only remark that the diſeaſe is in general much milder, and more tractable in N. America, than in the Eaſt Indies; but this is only what we would expect, in all the diſeaſes of warm weather; that the more temperate the climate, the more mild and tractable will the diſeaſes be; and on the contrary the more warm the country is, the more violent may we expect the diſeaſes of the warm ſeaſon to be. Infectious diſeaſes appear to make an exception to this general rule; for they are more frequent in the temperate countries, when generated either in fevers, or fluxes. Infection always renders them more dangerous, and obſcure in their proceedings, and they are very apt to prove mortal ſooner than we would expect from the appearances.

We attended a young woman within theſe twelve months paſt, who was taken with a very violent flux. She had been ſome days very bad before applied to. She was in a very great fever, with frequent bloody evacuations; her tongue was furred of a browniſh colour, and her pulſe 120 in a minute; as ſhe had no appetite, and her ſtomach appeared to be loaded, ſhe had an emetic of two grains of emetic tartar, and an antimonial powder at bedtime, and the next morning half an ounce of rochel ſalts. After this, the griping pains which had hitherto been very ſevere, were eaſier, and at night again, the antimonial powder was repeated. She had conſtantly warm drinks, and ſometimes ſago with a little wine and ſugar to eat, and ordered to keep conſtantly well covered with the bedclothes, although in warm weather; for moſt people are too careleſs of this. The third day after ſeeing her firſt in the diſeaſe, the fever was ſtill high, and her tongue foul, her pulſe quick and ſmall, and her ſkin dry; this day ſhe had three, or four of the antimonial powders, of about five grains in each, which was as much as ſhe could conveniently bear on her ſtomach, with warm drinks; and was prevailed on to keep a blanket over her, for hitherto ſhe only kept a ſheet on her; ſome little perſpiration began to appear, with a ſoftneſs of the ſkin; but the griping pains continued. Next day ſhe had an ounce of caſtor oil, which gave great relief from the pain, and at night an antimonial powder. Hitherto ſhe had reſted but very little in the nights, from the frequent calls to get up, and getting cold in that manner, from ſtaying too long in the neceſſary at once—a very common cuſtom with thoſe who are bad in this diſeaſe. But from this her pains almoſt totally left her, as if by a miracle, and ſhe ſlept and ſlumbered day and night, for three days and nights ſucceſſively, with very few calls to get up, and ſcarce ever aſking even for drink. This remarkable relief was the more wonderful, as ſhe had no opiates from the beginning of the diſeaſe. By the ſuddenneſs of the change of the diſeaſe, we were not without ſome fears, that a mortification had taken place in the inteſtines; but the eaſe was obtained by the irritation being leſſened, and its cauſes being carried off. The ſecond day of this reſt, ſhe had another doſe of caſtor oil, and the third ſome more of the antimonial; and as the fever and violent pain was now gone, rhubarb and bark finiſhed the treatment ſucceſsfully.

It is very difficult to foretell at what time of the diſeaſe, either rhubarb, opiates or bark may be ſafe; they never can be given with any degree of ſafety, until the patient is entirely free of all inflammatory ſymptoms; and if any of theſe have been given prematurely, and found to diſagree with the patient, they muſt be immediately left off, and a little caſtor oil given, in order to prevent any bad conſequences from taking place: as for aſtringents, they are very ſeldom neceſſary; we believe it would be much better to never uſe them in this diſeaſe; for if the treatment has been otherwiſe proper, in the acceſſion, and height of the diſeaſe, they will not be neceſſary, for the flux will commonly ceaſe gradually without them; and in caſe the diſeaſe has been otherwiſe improperly treated, they will be ſo far from remedying, that they will add to the evil; ſo that it would be much better they were proſcribed entirely in this diſeaſe. For even in the chronic lax, or lientery, which follows in conſequence of improper treatment, in the early periods of the malady; the only ſtate when aſtringents are even ſafely given, their uſe is ſeldom attended with ſucceſs. Here rhubarb comes in its proper place as a ſtrengthener, and alſo bark and chalybeats, and a moderate uſe of good port wine, with a pure air, and gentle exerciſe. But we muſt, as much as poſſible, prevent any obſtructions from taking place in the viſcera of the belly, by theſe means; but in caſe we have ſufficient reaſons to ſuſpect that any ſuch obſtructions have taken place, from the obſtinacy of the diſeaſe, or by ſwellings of the feet, or of the lower belly, then ſmall doſes of a grain or two of calomel, repeated every two or three days, in a pill, will anſwer very well for this purpoſe. Obſtructions of this nature are very apt to form in the meſſenteric glands, when a patient is much reduced either by this diſeaſe, or by fevers; and when this is the caſe, they obſtruct the courſe of the chyle, which paſſes off by the inteſtines, and cauſes the variety of diſeaſe known by the name of a meſenteric flux. When this is the ſtate, the patients, although they ſometimes have a tolerable good appetite, and take food in moderate quantities, yet it can afford them but little, or no nouriſhment, and therefore they continue long weak, and meagre: here calomel is the proper antidote, by its ſtimulus, it removes theſe obſtructions in the courſe of the lacteals, and bitters may be advantageouſly uſed at the ſame time, and likewiſe bark, &c.

The ſympathy of motions which ſubſiſts ſo generally either in ſickneſs or health, between the ſkin and the ſtomach, and inteſtines, is as viſible in this diſeaſe, as in any other, or more ſo; for the moſt violent pains of the bowels are brought on by the expoſure of the ſkin to cold, and they are as certainly alleviated, by keeping the ſkin warm, and promoting a perſpiration, by warm drinks and antimonials. This is well exemplified by the eaſe, which ſo conſtantly follows a few hours of reſt in the night, and warmth in bed; but we never yet had hopes of ſucceſs in the treatment of patients who were reſtleſs, toſſing about, and would ſit, or lay about any where, almoſt naked, even in the warmeſt weather, or thoſe, who by their impatience or negligence toſs the bed-clothes off them in the night; for if ſuch patients do recover, it is not owing to their own prudence; but the ſtricteſt watch ſhould be kept over them, and where reaſon and prudence prevails, they ſhould be perſuaded to be very careful in this reſpect. Heat where the air is pure, as before obſerved, is very ſeldom the immediate cauſe of any diſeaſe; but cooling ſuddenly, is in general the cauſe of all the diſeaſes attributed to heat; therefore the principal object is to avoid ſuddenly cooling; for in this conſiſts the principal danger; for a little variation when the body is much heated, operates very powerfully, by ſtopping the perſpiration, and conſtringing the ſkin, which is communicated to the ſtomach, inteſtines, &c. and caſting the fluid ſuddenly upon the interior viſcera, and cauſing inflammation, fever or flux; and as we know this to be the cauſe, the ſympathy between the ſtomach and external ſkin, is very evident here, and the cure as we have pointed it out is more rational.

The choleras of children ſometimes degenerate into dyſenteries and are cauſed in the ſame manner as in adults, by getting cold; from expoſure to the night air, when prediſpoſed to be affected in this manner: as they are in their ſecond ſummer, by their beginning about this time, to uſe other food, which is harder of digeſtion, beſides their milk. And about the ſame time, they are more liable to be troubled with worms; and likewiſe their teeth are then moſt troubleſome, cauſing an increaſed irritability. And all theſe cauſes are increaſed in towns, by the heats in the day time being ſo great, and the impurity of the air. We have ſeen enough of theſe diſeaſes for ſome years paſt, to convince us, that any one who is well acquainted with the treatment of choleras, and dyſenteries in grown people, will not be at much loſs in the treatment of theſe diſeaſes of children; for they only require the proper allowances to be made, for the age and temperament, which any rational practitioner may ſoon inform himſelf of. Any reaſonable perſon may be eaſily perſuaded, that this diſeaſe is only to be ſafely, and effectually treated in a rational manner, from a knowledge of the cauſes, and not by a routine mode of treatment; for it deſerves the moſt ſerious inveſtigation.

It is not ſo much the medicine, as in the time, and manner of adminiſtering it, which cures the diſeaſe. In this diſeaſe we have not recommended one new remedy. The works of others contain every thing, which they will find here, but the time and manner of uſing them is our great object. We did not want a long liſt of infallible remedies; particularly in this diſeaſe, and the ague—but a rational, and ſcientific method of treating any diſeaſe with a few medicines, well choſen and properly applied, is our aim, for the purpoſes mentioned here. There are ſeveral other ſubſtances of nearly equal efficacy; but to mention them would only cauſe confuſion to the leſs informed, and thoſe who are otherwiſe, will be able to vary the remedies at diſcretion. But the grand object to be pointed out, in the treatment of diſeaſes, is the intention of cure, by giving a proper idea of the diſeaſe, and of the manner in which it affects the human body, ſo far as our diſcoveries have extended; and the rational method of obviating, and overcoming morbid actions, by medicines. We are aware that the treatment muſt neceſſarily be varied according to age, habit, ſex, climate, or ſeaſon; but the ſame general plan of cure muſt be kept ſight of, in all ſituations—therefore we ſhall not ſay that this only, is the true method of treatment; as we expect it to be varied ad infinitum.

Recapitulation.—We may now make ſome additional remarks on the cholera: as this affection is ſo ſuddenly deſtructive, and in all caſes ſo alarming, and dangerous. We have remarked that it is moſt commonly cauſed by the ſudden application of cold, after the body has been much heated: getting wet particularly—a ſudden fright, or any thing which cauſes much agitation of mind—alſo frequently act as exciting cauſes, when the body is prediſpoſed to it. In this diſeaſe the ſympathy between the ſkin, and the firſt paſſages, is ſeen in the ſtrongeſt light.

The ſtricture of the ſkin is immediately followed by the affection of the ſtomach; and the inteſtines, and biliary ducts, immediately ſympathize with it. The original cauſe of the diſeaſe is ſometimes ſeated in the ſtomach, or inteſtines: ſuch as crude, or indigeſtible fruit, rancid oily food, and ſuch like ſubſtances, before the cold is applied. On the other hand, as the ſkin and its affections are very common cauſes of this, and other diſeaſes of theſe parts, ſo it may alſo be uſed in their cures. The moſt certain, and powerful means of cure, of which we are poſſeſſed in choleras, and ſome other acute diſeaſes of the firſt paſſages, are warm baths, and fomentations to the pit of the ſtomach—warm bathing may be applied to the whole body, or at leaſt to the lower extremities; and a vapour bath may often be practicable where the immerſion is not; there are various ways of applying it, as wrapping the patient up in a blanket, and placing him over a veſſel of warm water; or heating ſtones, or bricks, and pouring water on them, and placing the patient over the ſteam.

Warm thin fluids ſhould be uſed for drink, ſuch as gruel of oatmeal, which is to be preferred, if convenient; to which may be added, a ſpoonful or two of wine to every pint, with a little ſugar and nutmeg; weak chicken broth is alſo an excellent drink, it may be ſeaſoned as the patient chooſes; frequently drinking a little is apt to anſwer beſt, when the ſtomach is very irritable; and a piece of flannel or coarſe cotton cloth wrung out of warm water, is a very efficacious application to the pit of the ſtomach, as it may be frequently removed without much inconvenience; a few drops of brandy have been thought to increaſe its efficacy: putting it on the flannel juſt before its application. As ſoon as a perſpiration can be promoted, by ſuch means as here recommended, the vomiting, and pain of the bowels will ceaſe, or at leaſt be much alleviated.

We have not yet mentioned laudanum; we are too well acquainted with its pernicious, as well as its ſalutary effects; to recommend it indiſcriminately: a manner in which the uſe of it is much too general. In ſome very ſlight caſes, it may be uſeful in ſmall quantities, but it ſhould never be perſiſted in; for by its obſtructing the motion of the inteſtines, it is frequently more hurtful than uſeful, and often it is a deleterious poiſon, in the diſeaſes of the inteſtines.

Another mode of promoting the healthy action of the ſkin, and thereby of relieving the interior parts, is, by means of frictions: either with a fleſh-bruſh, or a piece of coarſe woollen cloth; but the body ſhould be kept warm at the ſame time, and the chafing, which may be applied to all parts of the limbs and body, ſhould be continued until a warmth is promoted—it anſwers beſt when performed under the bed-clothes; the patient at the ſame time, uſing warm drinks. Applications of this nature to the ſurface of the body, are alſo very uſeful in other diſeaſes of the firſt paſſages, particularly in dyſenteries—there is no other means which we have known ſo effectual, in removing the ſevere griping pains, and other ſymptoms which attend this diſeaſe. For always, when a warmth, and gentle perſpiration of the ſkin can be promoted, the violence of the pain abates in a ſhort time after.—Cholicky pains, are alſo often relieved in the ſame manner. Together with theſe external applications, the internal uſe of any bland-oil, ſuch as that of almonds, or olives, or even caſtor oil, is excellent for allaying irritations of the firſt paſſages. The cholera, we ſhould place among the higheſt degrees of irritation, in theſe parts: and a diarrhea as the leaſt remove, from a healthy ſtate—either may come on ſuddenly, from apparently ſlight cauſes at firſt. But it is remarkable that a dyſentery, more commonly begins as a ſimple lax, or rather diarrheas appears to degenerate into dyſenteries, very often; but choleras ſeldom ever do—although the moſt acute diſeaſes of the firſt paſſages. Local affections of the glands of the meſentery, or of the liver, are ſometimes cauſes of theſe affections, ſuch as ſcirrhous ſwellings of theſe parts—hence the hepatic flux, &c.

The prediſponent cauſes of theſe affections appear to be great irritability of the parts, when they are in that ſtate, very ſlight caſes may excite theſe diſeaſes. It is very common for ſeamen after long voyages, to warm countries to eat great quantities of fruit. Whilſt out at ſea they have been confined to ſalt meat, and biſcuit for ſome months; being uſed to a diet ſo uniform, the leaſt change in their food is very apt to affect their firſt paſſages. We have known a piece of cucumber not larger than a nutmeg, cauſe violent griping pains, and ſlight choleras; in ſuch ſituations, a ſimple lax often proceeds without any intermediate ſtage into a dyſentery—this is the general manner in which they originate, in warm climates—Pringle and others, mention hardened excrements, ſtopping up, and irritating the inteſtines, as the manner in which the diſeaſe is produced; we do not deny the poſſibility of this, but we are certain it is a rare occurrence, even in temperate climates: and ſtill more ſo in warm countries; Dr. Cullen has followed Pringle in this. Drinking large quantities of warm milk, chicken broth, gruel, or a jelly made of ſtarch, anſwers well. A little cinnamon, ſugar, and wine may be added, to any of them in order to render them agreeable. Of late a ſuppoſed diſcovery, of the virtues of lime-water added to milk, has been recommended in high terms of approbation; we do not doubt its utility, either with, or without lime-water—and where an acid acrimony prevails, the lime water may be very uſeful. All the abſorbents, and vegetable alcali have been uſeful in light caſes.

Periodical and Continued

FEVERS.

Intermittents.

THE phyſical nature of intermittent fevers, (or agues) has hitherto been an obſcure ſubject; although theſe diſeaſes are ſo very common in many parts of the world. They would to us appear to be the connecting medium between febrile, and ſpaſmodiac diſeaſes; for in their periodical returns, and their modes of acting, they would appear very much, to reſemble ſpaſmodiac affections, although they have always juſtly been claſſed with fevers; and often degenerate into thoſe of a remittent nature. The ſtomach appears to be the part principally affected in theſe diſeaſes; the head-aches, and pains of other parts, appear to be cauſed by their ſympathizing with it. Cold and moiſture, applied to the ſurface of the body, often cauſes ſickneſs of the ſtomach. It appears to be the centre of the ſympathetic affections, more than any other part of the human body. But beſides theſe external cauſes, the eating of crude, acid, and indigeſtible ſubſtances, are very often cauſes of theſe affections: but it appears from circumſtances, that there muſt be a prediſpoſition in the habit of body, or otherwiſe theſe diſeaſes will not take place, although ſome local ſituations prediſpoſe ſo much to aguiſh diſeaſes, that very few eſcape them in the autumn. But we may remark that the weakly, inactive, and delicate females, or children, are moſt apt to ſuffer, and robuſt and active men, are the moſt apt to eſcape theſe diſeaſes.

There are many large diſtricts, or even countries, where perfect intermittents are never generated—the northern parts of Britain and Ireland, are happily exempt from them. Theſe countries do not derive their ſalubrity in this reſpect, from a dry atmoſphere; for we are perſuaded that no part of the world is ſubject to more frequent rains, cloudy weather, and moiſture of the air: neither is the ſurface of the earth univerſally dry; for there are numerous tracts of marſhy ground, meadows, and turf or peat bogs, which are commonly covered in a great meaſure with water, particularly in the time of rains; and alſo many parts where the ſoil is an adheſive, loamy clay, which does not abſorb the water; but there is no putrefaction, or decompoſition takes place in either of theſe ſubſtances. The turf forms a good fuel for the inhabitants, when the abſence of rain will permit it to be ſufficiently dried; it is evidently a congeries of vegetable matters, which has been accumulating for ages; for parts of trees, and often very large whole ones, principally of oak or fir, are found covered five or ſix feet deep under it, and hazlenut ſhells, bark and branches are alſo found; and although theſe trees muſt have lain there, for many centuries, they are ſtill very good timber for domeſtic purpoſes. But ſo ſlowly does putrefaction proceed, that all vegetable matters are as well preſerved in thoſe places, as they could be by the moſt careful pickling, or candying; and this property is evidently the cauſe why their neighbourhoods are ſo healthy—for no putrefaction takes place.

We may be excuſed for thus introducing an account of countries where intermittents never appear, as a contraſt to thoſe where they are annually endemic. We may obſerve, that there are no diſeaſes more influenced by local ſituation, than theſe are; for in moſt perſons, the place of reſidence may either cauſe, or prevent them. We commonly find a ſimilarity in the local diſeaſes of unhealthy diſtricts, both in their natures, their appearances, and alſo in their proper treatments. This affords us one connecting medium.

The paroxyſms or fits of agues generally come on without any previous notice. There is commonly on the approach of the fit, an inclination to yawning, ſtretching, and laſſitude, commonly attended with a ſenſe of uneaſineſs in the ſtomach, and frequently an inclination to vomit; here, as in moſt other affections of the ſtomach, the head ſympathizes with it, and generally aches violently. The ſkin alſo by reaſon of its ſympathizing with the ſtomach, becomes dry and ſhrivelled, having the appearance of gooſe ſkin. And all the membraneous parts of the body appear to partake of the affection, accompanied with an aching, which ſometimes would appear to be in the bones of the limbs, or muſcles. There is commonly a pain of the back of the neck, and loins, and a diſlike to an erect poſture, ſo that the patients can ſcarce avoid lying down, wherever they happen to be at the time. It is curious to obſerve in this, as well as in moſt other affections wherein the ſtomach is diſeaſed, how readily the ſkin, and all the membraneous parts take the alarm, and are affected with it. The pulſe becomes ſmall and contracted, and is often ſcarce perceptible; a pain in the eye-balls, or rather in their bottoms, with anxiety, and coldneſs; ſo that the patients can ſcarce prevent their teeth from ſhattering.

This cold ſtage commonly continues an hour or two, before the warm ſtage commences. The trembling commonly begins in the lower limbs, and from them aſcends to the arms; ſo that it has ceaſed in the lower, before it begins in the upper limbs. But the heat, as well as the cold, begins firſt in the ſtomach, and is propagated from thence to the other parts of the ſyſtem. The kidneys alſo appear to partake of the affection; for during the cold ſtage, the urine which is ſecreted, is of a clear pale colour; but in the hot ſtage, it is high coloured. The ſkin becomes ſoft and moiſt, the pulſe full and diſtinct, the head-ache abates; but an inſatiable thirſt runs through all the ſtages, with an averſion to all ſolid foods. This is the general progreſs, of a regular paroxyſm of a well formed intermittent; which as ſoon as the perſpiration commences, leaves the patient in a very fatigued ſtate; ſo that they generally incline to ſleep, after which they are often apparently free of diſeaſe, until the next period. But there are great varieties in the ſeverity, and continuance of theſe attacks; for inſtance, in ſome, there are little or no cold fit, and in others, there is very little of a hot ſtage; ſome are perplexed with head-aches at night, and profuſe perſpiration, even long after the paroxyſms are overcome by medical aid; but all theſe varieties are influenced by the patient's habit of body, age, ſex, temperament, &c. and alſo by the local ſituation where he is attacked. In order to convey an adequate idea of a paroxyſm, it is requiſite to be acquainted with the phyſical properties of the human body. As the veſſels on the ſurface are conſtricted, in the time of the cold fit, the fluids muſt be propelled to the interior parts, and conſequently the viſcera, and large veſſels are loaded with them; this will cauſe them to act with greater force: hence the anxiety, pain, &c. cauſed by the diſtention oppoſing the rigor.

It appears to be a general law, through every part of the animal economy, that when any part is diſtended, with its proper fluid, it will be the more ſtrongly ſtimulated to contract, in proportion to the diſtention which it ſuffers. The heart is ſtimulated to contract by the blood, and the trunks of the abſorbents by their contents, the bladder by the urine, and every viſcus by its proper contents; and this, without our ſuppoſing any acrimony being generated in the fluids, although in continued fevers, and ſome other diſeaſes, we may ſuppoſe there are ſome ſalts, or their component parts predominant in the fluids.

The cauſe of head-aches have been accounted for in this manner. The veſſels of the interior parts of the ſyſtem, being ſtimulated to ſtronger actions, in order to propel their contained fluids, the head and other interior parts, are loaded with blood. Hence the head-aches in the time of the paroxyſm; and no doubt, the brain by its veſſels being diſtended with blood, may furniſh the nerves with more animal ſpirits, and increaſe their influence by their glands being ſtimulated; for in the oppoſite extreme, when their veſſels are emptied by blood letting, in an erect poſture, or any other cauſe which leſſens the propulſive power of the heart, a weakneſs and fainting enſues: but as the heart and brain, act upon, and ſtimulate one another reciprocally, they no doubt, do the ſame in fevers.

A ſtimulus being added to any of the glands, alſo increaſe their ſecreting power. In the cold fit of an ague, the internal parts are full of blood, particularly the viſcera of the belly are diſtended, and thereby ſtimulated to a larger ſecretion of bile than ordinary. This is always evinced, either by vomiting of bile, or by ſickneſs, and uneaſineſs at the ſtomach, by the bile regurgitating into it. For the ſympathy between the ſkin, and the biliary ſecretion, and between them both, and the ſtomach is very evident here; for being expoſed to cold cauſes a redundance of bile, and ſickneſs of the ſtomach, and pains of the bowels.

The ſtomach, inteſtines, and liver often affect one another by ſympathy—the ſtimulus extending from one to the other. And the other glandular ſecretions, are increaſed in the ſame manner, and accounted for on the ſame principles, during the paroxyms of fevers. The force of the heart being increaſed by a greater quantity of blood, labours to overcome the reſiſtance, if it has ſufficient ſtrength, and is not over much exhauſted of its energy—but if deprived of this, it is overcome by the conflict, and death enſues, which ſometimes happens to be the caſe, in the cold fit; but this is the mode in which death approaches, in other caſes as well as this; for the external parts, near death, have much the ſame appearance, as in the cold fit of an ague, the blood recedes from the external parts to the internal—the heart, lungs, and the veins are loaded with it; and the external parts are ſhrivelled, the vivid ruddy, and lively colour departs, and the patient aſſumes the ghaſtly death like appearance, ſo eaſily known to thoſe, who are uſed to ſee their fellow mortals in this, their laſt extremity. But when the ſtrength of the heart is ſufficient to overcome the reſiſtance in this conflict, the heat and feveriſhneſs enſues, until a balance is again brought about, between the ſeveral functions, &c. and then there is an interval of health, of uncertain duration.

This rationale of the cauſe, progreſs, and termination of the paroxyſm, we hope, will appear ſatisfactory, and agreeable to the general laws of the animal economy, in the progreſs of diſeaſes.

An ague when once formed becomes habitual, and unleſs the mode of life, or the habits, or place of reſidence are changed, it may laſt a long time; and the ſlighter it is, and the ſeldomer it returns, the longer, in general is the duration of the diſeaſe, when left to itſelf. And the more violent any periodical fever is, the ſhorter, generally is their duration, until they terminate either in death, or recovery. But this ſeems to be a general rule in the animal economy; for any of theſe diſeaſes which would ſooneſt deſtroy the conſtitution, when left to themſelves, are the ſooneſt cured, when properly treated. Hippocrates had ſome idea of this, when he ſaid, that a quartan muſt laſt until it has made up the ſame number of hours with a continued fever, of fourteen days. We conſider all periodical fevers, as intermittents, and remittents, as belonging to the ſame claſs, and very nearly allied; and dyſenteries, as only fevers taking a peculiar direction towards the inteſtines. In dyſenteries there are always exacerbations towards the evenings, and remiſſions in the mornings; and the ſame cauſes, with ſeveral variations produce them with all their varieties, in proportion as the exciting cauſes are ſlight, or more aggravated, and the preventatives and cures, are in ſome things common to all of them. In different people, fevers of the ſame ſpecies vary widely, without any external, or viſible difference in the habits, or conſtitutions of the patients themſelves.

The cure of agues has given as great latitude to empyriciſm, as any other diſeaſe, with which the human body is affected; and of conſequence as great varieties of medicines have been uſed in it. Dr. Lind long ago, enumerated ſeveral hundreds, and the number is always increaſing; but with a proper knowledge of the animal economy, and the Materia Medica, together with an accurate idea of the diſeaſe—this, or indeed any other diſeaſe, may be overcome by a very few medicines, when properly applied. But although the cure of an ague is often eaſy, and ſimple, yet it requires medical ſkill very often, to overcome it; for it may frequently be cured, by the ſame medicines, which an ignorant perſon, may have uſed in vain; and even in large quantities; this we have often known to be the caſe.

As this diſeaſe is ſo eaſily known, and ſo general in unhealthy ſituations, there is no neceſſity for giving a long account of prognoſtics. It generally makes its appearance at firſt, by a ſenſe of coldneſs at the ſtomach; yawning, and ſtretching, and ſlight acceſſions of paroxyſms, which afterwards become more ſtrongly marked, as the diſeaſe, by frequent ſlight acceſſions, becomes more confirmed—but what has been already ſaid, in the hiſtory of this diſeaſe, may be ſufficient for the purpoſe. Agues and periodical convulſions, are very ſimilar, both in natures, and their modes of treatment, eſpecially thoſe agues which are unaccompanied with fevers.

In the cure of an ague, whether quotidian, tertian, or quartan, much the ſame plan may be followed, as to treatment. An hour before the acceſſion of the fit, or paroxyſm, an emetic may be given, in caſe the time of acceſſion is well known; as it commonly returns nearly about the ſame time of the day—the moſt common time is about 10, or 12 o'clock; but it often anticipates, or delays an hour, more or leſs. When the emetic has began to operate, before the rigor is perceived, it may anſwer the better; ſo that the langour, anxiety, &c. may be in ſome meaſure obviated, and a perſpiration brought on. By this means the cold ſtage will be in a great meaſure prevented; and conſequently, the hot ſtage much leſſened, and the paroxyſm altogether ſhortened, and alleviated: and in ſome ſlight caſes, the return of future ones prevented, although this happens but ſeldom—working the vomit off in bed, and keeping warm covered, until the ſweating ſtage is over, and uſing warm drinks, is very proper—it may be very uſeful the next day, where there are any irritation preſent, to give caſtor oil; and after all is over, the bark may be begun—from three to ſix drachms may be ſufficient, for one who has not been habituated to this medicine, taken between the paroxyſms; but thoſe who have been accuſtomed to the uſe of the bark, or to bitters, as preventatives, or to ſpiritous liquors, require much larger quantities; but this muſt be left to the diſcretion of the preſcriber. But we muſt regret the too frequent, and unneceſſary uſe of bitters, in ſpiritous, or vinous liquors, as they are, when uſed unneceſſarily, no better than a ſpacious way of dram-drinking. The pernicious effects of this laſt, have been ſufficiently delineated already, by many of the preſent, as well as former ages. However they are not equally pernicious in all habits of body, or local ſituations, or ſtate of the atmoſphere—for in the lax, and phlegmatic habits of body, and in a moiſt, warm atmoſphere, there is ſome apology for theſe ſtimulants. But even here, and under ſuch circumſtances, if theſe medicines have not been made too free with, on former occaſions, they may be better avoided, eſpecially before dinner—it is a moſt pernicious cuſtom to uſe them, unleſs, in caſes of urgent neceſſity; but in a dry and pure air, and in healthy, firm, habits of body, drams, or bitters are inexcuſeable; but eſpecially in the mornings, either in a warm, or cold climate, unleſs where urgent neceſſity, as ſickneſs, or weakneſs demands.

The beſt method of giving the bark, is to begin with as large doſes, as the ſtomach will bear; but not often repeated—this will do more in changing the conſtitution, effectually, than by giving ſmall doſes, and repeating them often. For by this laſt method, the body becomes habituated to it, before the diſeaſe is cured, which deſtroys its effects, in a medical ſenſe. And becauſe the principal intention in the cure of agues, is to make a change in the habit; and if we may uſe the expreſſion, making it change, or forget its uſual cuſtoms, and periodical movements.—For when the body is ſome time habituated to any periodical diſeaſe, or other movement, for a length of time, it will return after the cauſe is taken away, keeping to its uſual time. This is the caſe with the ague, as well as ſeveral other diſeaſes ; on this account it is that the cure, putting the conſtitution out of its uſual courſe of proceeding, may overcome the diſeaſe—it is by this means, that emetics are uſeful, in the coming on of the fit ; ſo likewiſe is active exerciſe—even the bark itſelf, operates by fortifying the body againſt the periodical returns of the diſeaſe. And in the time of the fit, we have conſtantly found the beſt effects from a draught of antimonial wine, laudanum, and ſpirits of hartſhorn, a full doſe of each, which we have frequently known to cure the diſeaſe by itſelf, without any other medicine, in recent caſes, and a dry, warm, and pure air, and a good habits of body.

But the great object here, is to endeavour to find out the intention to be purſued ; and as the principal indication in the cure of agues, is in the firſt place, to obviate the paroxyſms, by putting the habit, out of its uſual routine, and by this means to obviate their periodical returns, by ſtimulating medicines, food, and drink, and afterwards, bringing about a change in the conſtitution, by ſtrengtheners, as bark, bitters, ſteel, aromatics, &c. and their preparations, taken in the intervals, in order, as ſoon as poſſible, to bring the body into a healthy ſtate—the ſhorter time they have been allowed to go on, and the leſs the conſtitution has been habituated to them, the better, and the eaſier is the cure, (contrary to the doctrine of deſpumation, and maturation.) Agues are eaſier cured in a week, or fortnight, than in a longer time, &c. for their continuance weakens the patients conſtitution, and the frequent recurrence of the paroxyſms, cauſes them to become habitual, and difficult to be overcome. But as there are every variety of intermittents, and remittents, and innumerable intermediate grades, from the ſimple quartan, which returns every third day, and leaves the patient entirely, on the intermediate days : or the tertian, which returns every ſecond day, and leaves a well day between, to theſe where the remiſſions are ſcarcely perceptible—therefore the treatment muſt be infinitely varied, in proportion to the ſeverity of the diſeaſe. Where there is an appearance of an inflammatory diſpoſition ;

ſometimes bleeding may be proper; and where the diſeaſe puts on the remittent appearance, with only imperfect intermiſſions, it ſhould be treated nearly in the ſame manner as remittents, with antimonials, and laxatives, ſaline draughts, or ſpt. mindereri; and when the inflammatory diatheſis is gone, or where none appears, the bark may be given in the intervals.

In obſtinate caſes of agues, which have continued a long time, either through the neglect of timely application, or the inefficacy of the method which may have been uſed, the cure muſt be varied according to the circumſtances of the caſe. If the bark has been uſed in ſufficiently large quantities, it may be conveniently mixed with port wine and water, to any degree of ſtrength; and when an ounce or two proves ineffectual, other additions muſt be joined with it; as bark one ounce and an half, ſnake root half an ounce, in wine and water, of each one pint. Preparations of iron, as the ruſt of iron, or ſalt of ſteel, tincture of iron in ſpirit of ſalt, or any other convenient preparation of it, and ſnake root, are likewiſe often uſeful additions to the bark, eſpecially in torpid conſtitutions. We have ſometimes uſed powdered ginger with the bark, advantageouſly. Theſe additions are moſt apt to anſwer in cold phlegmatic habits; and bitters of camomile flowers, gentian, and columbo root, and others, are all uſeful auxiliaries. Muſtard likewiſe is ſometimes of uſe; and other ſtimulant and ſtrengthening remedies. On the continent of Europe, where both the phyſicians, and their patients, are yet prejudiced againſt the bark of Peru, bitters and ſtimulants are more uſed than elſewhere, and alſo aſtringents and ſtrengtheners, and garlic, is much uſed; and it is ſaid they often cure agues with theſe, without having recourſe to the bark. In my laſt return from India, when ſhort of bark, we ſucceeded in curing agues, with powder of Virginia ſnake root, and prepared iron, with infuſion of camomile flowers, and a moderate uſe of wine, and ſpiritous liquors are ſerviceable; but not to ſuch an extent as to promote giddineſs; for then they do more harm than good, by weakening, and exhauſting the vital energy of the habit, and leaving it lower than before.

In very old and obſtinate agues, towards the winter, we have ſometimes found good effects from pills of blue, or white vitriol, one grain of either, and three or four grains of extract of bark; one or two of theſe taken daily, has ſometimes with us cured ſimple periodical agues, where no fever was preſent; and we have no doubt but the nitrated ſilver, may alſo be as efficacious in this affection, as in the epilepſy, or other convulſive diſeaſes.

Arſenic, although a violent poiſon, has been uſed very ſafely alſo in the cure of agues. Dr. Fowler who firſt recommended it to the public, adviſes thirty four grains to be boiled with an half pint of water in a florence flaſk, adding one drachm of vegetable alkali; ten or twelve drops of this is a doſe for a grown perſon, two or three times a day; inſtead of a ſand heat, it may be boiled by ſetting it among the aſhes and coals of a common fire. We believe the nitrous acid, (aqua fortis) a ſolvent preferable to the alkali; half an ounce of this, and half a drachm of finely powdered arſenic, may be boiled together in a Florence flaſk; and the doſe may be increaſed daily.

It is a very common occurrence, in old and obſtinate agues, for obſtructions to form in the viſcera of the abdomen, as the liver, ſpleen, pancreas, meſſentery, and other glandular parts, and to cauſe ſwellings of the belly, and of the legs. We believe there is nothing preferable in theſe caſes, to purgatives, bitters, and eſpecially mercurials, in ſmall and repeated doſes; as a grain or two made into pills, with ſix or eight grains of the pills of alloes and myrrh, or the compound pills of colcynth, repeated every two or three days, with bitters and ſtomachics on the intermediate days, and gentle exerciſe, is alſo a very neceſſary part of the cure, to promote the circulation, and abſorption of the fluids; and by the accelleration of their motions, to promote the generation of a greater degree of animal heat, and conſequently to prevent the cold fit. The beſt time to uſe exerciſe, is juſt before the rigor is expected to return; as by that means the body may be thrown into a warmth and perſpiration, the more effectually, to prevent the acceſſions of the paroxyſms, without exhauſting the ſtrength; and we have this conſolation to know, that if we can by any means of this nature, put over the time of its acceſſion, it is one ſtep towards a cure; but even when it is put off for a period, or two, it is apt to return at intervals of a week or fortnight, eſpecially at the change or full of the moon: therefore, the bark muſt be had recourſe to every week, at leaſt, for ſome time after.

As in agues, or remittent fevers, there appears to be a deficiency of animal heat, or at leaſt an unequal, and imperfect diſtribution of it, coming on in exceſs after the cold fit is over, at firſt only partially, ſome parts being warm before others, it ſhould be a principal part of the cure, to prevent, as far as in our power, the acceſſion of the cold fit, by exerciſe, cordials, volatile aromatic ſpirit, and laudanum, to put the habit as much as poſſible out of the uſe of attending to its periods; for by this means we make a conſiderable advance towards the cure: for the vital energy being accumulated in the time of the cold fit, it breaks out with redoubled vigour when that is overcome. Exerciſe, as it haſtens the circulation, and the reſpiration, is of conſiderable advantage; for then more pure air muſt become fixed in the lungs, and conſequently more of its heat is imparted to the body. Exerciſe alſo promotes the circulation in the blood-veſſels, and abſorbents; and is on all theſe accounts, of very important uſe, in preſerving the health of the body; but then it muſt not be carried to exceſs, as that would be as bad on the other hand. But as a torpor of the extreme veſſels, appears to be a very general attendant of agues, and a liſtleſsneſs, and an inappetency to motion, and a depreſſion of ſpirits, every means ſhould be uſed to exhilirate the drooping ſpirits of the patients by agreeable company, change of place, and air, riding on horſeback, and amuſements, but eſpecially in a pure air; and every means ſhould be uſed, which conduces to ſtrengthen the habit of body, by the moſt nouriſhing food, drink, and cordial medicines; all of which are ſometimes neceſſary, in obſtinate caſes of this diſeaſe.

In the ſpring, the ſetting in of warm weather conduces much to the cure of agues; hence the vernal agues are more eaſily cured than the autumnal: they are likewiſe fewer in number—ſcarce any being taken at this ſeaſon, but thoſe who are very much prediſpoſed to them from habit of body. A principal intention to be kept in view, in the treatment of intermittents, as well as other habitual periodical diſeaſes, is, as far as poſſible, to obviate the habit, or to prevent both the diſeaſe, and the medicines from becoming habitual. On this account, beginning with large doſes of medicines, and not too frequently repeated, anſwers by far the beſt; for, if on the contrary, we were to begin with ſmall doſes, frequently repeated, we may habituate the body to the uſe of them, before the cure is effected; ſo that they would produce very little, or no effect. And in this way the powerful effects of opium, bark, or wine, may be nearly loſt; for many people by beginning to uſe the bark by ſcruples, or half drachm doſes, every hour or two, and finding this quantity produce no effect, they increaſe it gradually, and go on with it, and in this manner, ſome perſons have taken whole pounds of bark for a cure, when a few ounces judiciouſly managed, would have done it more effectually.

Animals when in health and vigor, we may ſay with propriety, have a due quantity of vital energy; and when they are prediſpoſed to an inflammatory diatheſis, the vital energy is too redundant to be conſiſtent with health; for then a very ſmall irritation may bring on diſeaſe. But the diſeaſe under conſideration, is commonly more owing to a deficiency of vital energy, when other cauſes act in concert with it, as by getting cold, or being weakened with other diſeaſes, a cold, lax, or phlegmatic habit of body, and conſequently a deficiency of animal heat; eſpecially where the perſon breathes an air, impregnated with marſh miaſmata.—A perſon in this ſituation, being expoſed daily even to a ſmall degree of cold, will firſt perceive a periodical chill; which, from habit will increaſe every time it recurs, unleſs ſome other cauſe ſhould oppoſe or counteract it; and in this manner periodical fevers appear to be formed, when nature follows her own uninterrupted courſe. But in the time of the hot fit, there are violent commotions excited in the conſtitution, this exertion exhauſts the vital energy, and then ſubſides, leaving the patient languid and weak, by expending the energy in a profuſe manner. Hence the longer it goes on, or the oftener it returns, the more it weakens, and diſſipates the vital energy, and diſpoſes the glandular viſcera to obſtructions, as the liver, ſpleen, meſentery, &c. and often lays the foundation for dropſies and other chronic diſeaſes; for theſe viſcera are prediſpoſed to obſtructions on account of their peculiar ſtructure, more than any other part of the body, as is ſhewn in another place; ſo that although this diſeaſe, is ſeldom very alarming in its appearance, it often leaves the moſt ſerious conſequences, after it has been ſuffered to continue ſome time, if not judiciouſly treated; and on that account it merits particular attention.

Preventing the cold fit, as far as in our power, by means of ſtimulants, as opium, wine, volatile ſalts, &c. adminiſtered half an hour before the time of its acceſſion, and likewiſe by exerciſe, ſo as to heat the body, is of great ſervice; becauſe whatever can prevent the cold fit, in a great meaſure, alſo prevents the warm fit at the ſame time; as this latter is little more than a conſequence of the former. All the ſecretions and excretions, are profuſely increaſed in the hot fit, particularly the perſpiration, and the energy is ſoon expended; the whole body is left in a ſtate of languor, ſo that now the different organs, cannot obey their native ſtimulus, and therefore, obſtructions form in the moſt inert viſcera, as the liver, ſpleen, &c. Hence the uſe of ſtimulant purgatives, when we ſuſpect this to be the caſe, as calomel, and pills of aloes and myrrh, to be repeated once or twice a week in obſtinate caſes, as prudence may direct.

We only expect a temporary effect from ſtimulants; for they do not add any permanent energy to the ſyſtem. For this purpoſe, we are to depend upon the bark, and ſteel, or any chalybeat preparation; and in caſe we wiſh to uſe a ſtimuli along with theſe in phlegmatic conſtitutions, Virginian ſnake root may be added; the bark, and chalybeats alſo add to the permanent ſtrength, and gives energy to the ſyſtem: whilſt the ſnake root is rather a heating, or ſtimulant medicine; but opium, ſpiritous, or vinous liquors, or volatile ſalts or ſpirits, and exerciſe, are only temporary ſtimulants, without adding any permanent energy to the ſyſtem; and we would wiſh this to be attended to, in the adminiſtration of the medicines recommended, and in the whole intention of cure.

Although there are innumerable remedies, and methods of cure, recommended in this diſeaſe, yet a judicious phyſician will find no great difficulty, in reducing them to a very ſmall number of heads, or different intentions, which may be brought about by various, and often ſeemingly oppoſite, and contradictory methods. It muſt be allowed, that a great number of ſubſtances are held by the ignorant, as efficacious medicines in this, as well as ſome other diſeaſes, which are ſo totally void of all efficacy, that if ever they did appear to perform cures, it muſt be more owing to their good fortune, in happening to be adminiſtered at a time, when nature would have performed the cure as well without their aſſiſtance, as with it. And many grave doctors, it has been ſaid, have owed their celebrity to reaſons no better founded.

As ſome opportunities have lately occurred to us, ſince the former parts of this piece was wrote, of making ſome additional obſervations, both on intermittent, and remittent fevers, in ſituations where they are as frequently endemic, as in any other part of the world—we may attach them to the foregoing; we have alſo found, that where they are the moſt frequent, they are alſo the moſt obſtinate whilſt their ſeaſons continue, which is at its greateſt height in September; but they generally become prevalent, in Auguſt, and continue until the froſt appears in December. Some caſes occur at other times of the year, particularly in the ſpring; but they are commonly eaſily overcome by exhibiting emetics, half an hour before the acceſſions of the paroxyſms, ſo as to be operating at the time of the acceſſion, by which means they frequently overcome the febrile action, or at leaſt render it milder. A ſtimulant cathartic, compoſed of rhubarb, and jalap, ten or fifteen grains of each, and from one to three grains of calomel, was a very neceſſary part of the cure; particularly in lax, or phlegmatic conſtitutions, where no ſymptoms of irritation appeared, particularly in moiſt, or rainy weather; but in the warm and dry weather, particularly in robuſt, or irritable patients, common ſalts, or caſtor oil, were extremely uſeful; as the patients commonly had very uneaſy ſenſations in their ſtomachs, ſimilar to that in remittents—here the caſtor oil, was a very neceſſary part of the treatment; and at the ſame time gentle antimonials at night. And in caſe of great uneaſineſs, and want of reſt, where no inflammatory diſpoſition appeared, a few drops of laudanum. The premature, and exceſſive uſe of the bark, before theſe very neceſſary evacuations, we had too many opportunities of witneſſing, in the practice of ſome others in our neighbourhood.

In the ſpring, or ſummer, after theſe preparations, a few doſes of bark commonly carried off the diſeaſe, ſuch as a drachm or two early in the morning, and at noon; for we have always found the bark anſwers beſt when given on an empty ſtomach: neither eating, or drinking, for an hour, or two afterwards; for we are much in the perſuaſion, that it produces its effects on the ſtomach, only—and conſequently it muſt act the more powerfully on its coats, when it is moſt empty, as bitters alſo; and we believe moſt other medicines do. Another conſideration, which, in public practice anſwers well, but which we have ſeldom known to be much followed by private practitioners, was to give the bark in as large doſes, as the ſtomach would bear, and not to harraſs patients every hour, with ſcruple, or half drachm doſes—half an ounce, or often more, two or three times a day, anſwers much better, in every reſpect. But it muſt be confeſſed, that there are ſome perſons of ſuch delicate ſenſations, as not to bear large doſes of this medicine; but if they can take the powder in any form, it will be much eaſier taken ſeldom, and in large doſes, than in ſmall ones, frequently repeated; for the principal cauſe of averſion to it, is the roughneſs it leaves in the mouth; and a ſcruple produces this ſenſation, as well as half an ounce. The action of the abſorbent veſſels, appears to be very defective in this diſeaſe ; it is apparently on this account, that emetics and ſtimulant cathartics, are ſo eminently uſeful; but we know that there are ſome exceptions to this, as a general rule: in ſtrong, young, and inflammatory conſtitutions ; for lenient ſedatives appear to anſwer better here, at the beginning of the diſeaſe, eſpecially in warm, dry weather; in which times, and temperaments, the diſeaſe is apt to aſſume very much the appearance of a remittent, eſpecially during the firſt two or three days of the attack. It is often impoſſible to foretell, whether it will be in future accompanied with perfect intermiſſion, or only remiſſions of the fever. Of this, we can only judge by the concomitant circumſtances, the patients habit of body, the preſent ſymptoms, and the prevalent diſeaſes in the neighbourhood ; but in ſuch ſituations as we here alude to, there are every grade and variety, from the ſlighteſt intermittents, to the moſt violent remittents, there does not appear to be any ſpecific, nor well defined limits. And alſo the dyſentery, is more nearly related to theſe affections, than is commonly imagined ; although that is a common diſeaſe, in ſome healthy northern countries, where theſe others never appear ; and alſo in ſome other high, hilly, and otherwiſe healthy countries.

From what has been ſaid here, it will appear, that it would be an endleſs undertaking to ſpecify all the varieties of intermittents, which may appear, in unhealthy countries—all that can be done in this way, is only to fix the land marks, or to lay down ſome of the principal outlines, and to direct the young, or inexperienced practitioners, to depend on a well founded knowledge, of the phyſical nature of the human body, of its diſeaſes, and remedies ; for the remainder. For it will appear obvious, that where the diſeaſe verges near to the remittent form, the treatment muſt be accommodated to the occaſion, and muſt be ſimilar to that of the moſt ſlight remittents, as their differences are ſometimes imperceptible.—Here the fever muſt be overcome by gentle laxatives, as caſtor oil, or ſalts, which ever of them are moſt agreeable to the patient, and antimonials with the ſaline mixture, (or vinegar ſaturated, with the volatile alkali,) either the ſalts, or ſpirit of hartſhorn, ſo as to neutralize it; of which a table ſpoonful may be taken, with from four to ſix grains of the antimonial powder. Bleeding may alſo in theſe caſes, be very neceſſary at the beginning; particularly where hardneſs of pulſe, and pain acroſs the orbits of the eyes are preſent; for neither ſeaſon of the year, nor ſituation ſhould prevent this, where theſe ſymptoms are preſent to indicate it.

In this practice, we have ſometimes been under the neceſſity of being ſingular—for preventing the returns of aguiſh paroxyſms, we have uſed laudanum; and ſpirit of hartſhorn, given juſt before the acceſſion, in full doſes—the additions of any antimonial, we have ſeldom uſed lately, for it did not appear to be any improvement, to the compoſition, eſpecially where there were an over great propenſity to vomit, and a wiſh to prevent it; as ſhould be always done, when there is much irritability in the ſtomach, &c.

The varieties of intermittent fevers differ as much from one another, as ſome of them do from remittents. For the ſhort chill, followed by little or no warm acceſſion, which is common as the winter approaches; or in moiſt, and cold weather, in other ſeaſons of the year: are very different from the ſevere rigors, and violent fevers, of ſeveral hours duration, accompanied with delirium, eſpecially in the night; with profuſe perſpiration, and tormenting head-ach, which often prevents reſt altogether, for many ſucceſſive nights—and which even wine, opium and camphor, although the moſt powerful medicine for it, can ſcarce ſubdue. And yet in this ſtate there are very perfect intermiſſions, in which no ſymptom remains, but weakneſs alone. The length of theſe paroxyſms and remiſſions vary, from ſix to twelve, or eighteen hours alternately—in ſome the remiſſion will only continue ſix hours, until another chill ſucceeds; and in others it will continue eighteen hours; but in ſome of the worſt caſes there is neither intermiſſion or rigor. In theſe the diſeaſe is very ſimilar to remittents, and requires a ſimilar treatment. But here, as well as in all obſcure diſeaſes, it is by the ſymptoms which will never deceive us, and not the names that we are to be directed in our treatment: for beſides that, the names of diſeaſes are often miſapplied. It muſt appear, from what we have related of the various ſtates, and appearances of this diſeaſe, that thoſe who depend much on them, will often be deceived; even without the additional confuſion of a half dozen of noſologies.

There are other varieties of this diſeaſe, wherein there are only ſlight feveriſh acceſſions, without any chill, or rigor. This is the febricula of late authors; but by the populace, it is named the dumb ague—this term is not well underſtood, unleſs in agueiſh ſituations; it prevails chiefly among weakly, and delicate women, and children; and ſometimes among men, whoſe habits of body are weakly, and live on a too low regimen, in unhealthy ſituations, or cloſe towns, and lead ſedentary lives; but this is a very different variety of the diſeaſe, from that which attack with a chill only. They alſo require very different modes of treatment, although both are commonly called agues; for the one is only a cold, and the other a hot fit, or paroxyſm, properly ſo called.—— Where there are only a chill, or rigor, emetics taken before the acceſſion of the paroxyſms, are often effectual of themſelves, or ſtimulant doſes of laudanum, and ſpirit of hartſhorn, with a few moderate doſes of bark, and ſnake-root, or even the ſnake-root by itſelf, often effects the cure—but in the little fever, or the febriula, emetics are not always advantageous, or even admiſſible, on account of the irritability of the ſtomach, and the weak nervous ſtate of the whole ſyſtem; but the firſt paſſages may be cleared by caſtor oil; and then bark with good Port wine, and cordials, and nouriſhing food, with freſh air, and exerciſe, are the proper means by which a cure is to be obtained. We have pointed out theſe four principal varieties of intermittents; but there are between them every imaginable ſhade of difference, or as we may expreſs it, evaneſcent, and converging appearance; ſome approaching more to one form than to any of the others, and their treatment muſt be regulated accordingly.

We have hitherto ſcarcely taken notice of the periods, at which the paroxyſms return; we have ſeen them moſtly, either daily, or once in two days; ſeldom once in three days; in the early part of the autumn, they are moſt apt to be daily, that is when the air is moſt ſtrongly impregnated with the miaſmata. But towards the cold weather, they are commonly once in two days—and ſome rare inſtances happen of quartans, in the cold weather—but it is very common for daily intermittents to change into tertians; or at leaſt, after they are overcome for ſome time, by medicine, to recur in a fortnight, in the tertian form, for they are very apt to obſerve theſe diſtances of times in their periods; and getting a cold commonly renews the diſeaſe.

As the moſt acute diſeaſes are commonly the ſooneſt cured; eſpecially acute fevers. So alſo the more frequently the fever returns, and the longer the paroxyſms are, the ſhorter it is apt to be in its duration, if properly treated; and alſo the ſooner it would terminate, if left to itſelf. Quartans are commonly the moſt tedious of cure; and perfect, and diſtinct tertians, are more tedious than quotidians. When the cold fits are followed by little or no feveriſhneſs, they appear to partake as much of the nature of periodical convulſions, as of fevers—here the principal intention of cure, appears to depend on obviating the paroxyſms, by emetics given before the acceſſions; or laudanum, and ſpirit of hartſhorn. And on the intermediate days, eſpecially the day before the attack, bark, with ſnake-root, and chalybeats, are apt to anſwer well—but the degree of feveriſhneſs, or inflammation, muſt be our directory in the modes of treatment. When the fever returns daily, there is little time to give the bark, in the intervals between the fits; but when every ſecond day, the beſt time to give it is in the morning before the attack, if it does not come on before noon; but the evening before if it does. For this medicine appears to oppoſe the diſeaſe more effectually when given a ſhort time before the acceſſions; but it often fails unleſs aſſiſted by other medicines; and we are rather led to ſuppoſe that it acts as a preventative, than as a cure.

On Remittent Fevers.

REMITTENT Fevers prevail chiefly in the autumn, in warm countries, or after warm ſummers, in more temperate climates. They are to be diſtinguiſhed from intermittents, by the patients not being free from fever between the exacerbations, as they commonly are in intermittents; and by their paroxyſms returning more regularly, as in ſome caſes, twice in twenty-four hours; although the moſt common period, is once in two days; from which circumſtance, they have been denominated tertians; and the former, irregular, erratic, and ſubintrant, from the irregular and uncertain times of their attacks. Remittents are to be diſtinguiſhed from continued fevers, theſe laſt being without paroxyſms, or intervals of eaſe, although there may be ſlight diurnal remiſſions, towards the mornings, and acceſſions in the evenings; yet this is moſtly cauſed by the diurnal revolutions which attends us in our beſt health, from exerciſe, ſtudy, or buſineſs, the heat of the day, or ſtimulant food or drink; and this attends us as a habit; alſo in a ſtate of ſickneſs, although few, or none of theſe cauſes may then operate on us; but we are not for this reaſon to denominate continued fevers remittents.

The common appellation of bilious fever, applied to this diſeaſe, when by the irritation of the ſtomach, the liver is ſo affected, as to cauſe an increaſed ſecretion of bile, or a jaundiced appearance of the ſkin all over, and particularly of the whites of the eyes; but the name of bilious fever is very indiſcriminate. The appearance of bile in either of theſe ways, is only accidental, and not a conſtituent part of the fevers, much leſs is it a certain ſymptom, to diſtinguiſh one ſpecies of fevers, from others; for it only ſhews that there is ſome irritation in the firſt paſſages, which cauſes theſe appearances. There are ſome remittents which happen in the ſpring, but not ſo common as in autumn, or after the greateſt heats are over, which may juſtly be called the ſickly ſeaſon in moſt countries.

As there is every poſſible intermediate ſhade, between the moſt perfect intermittents, and the moſt violent remittents, and from theſe laſt to the moſt continued ſevers, we can perceive, that to diſtinguiſh all the varieties which fevers aſſume, would be an endleſs labour; it is therefore beſt to give the principal diſtinctions, and let every practitioner find out the varieties, as the ſymptoms indicate, or as they approach to one, or other, of the principal varieties here mentioned, or by any better mode, if he is acquainted with any ſuch.

Another diviſion of fevers might be into ſuch as are cauſed by marſh miaſmata, and vegetable putrefaction, from thoſe cauſed by animal putrefaction, and infection, which may form a ſecond genus. The firſt of theſe claſſes are generally of the intermittent, and remittent types; and thoſe of the ſecond diviſion, are of the continued form: this in my mind is a natural diviſion of fevers, and the diſtinctions, and diſcriminating circumſtances between them, is moſt eaſily underſtood, and obvious to our ſenſes; and theſe diſtinctions are likewiſe of great importance in practice. To theſe diviſions may be added a third, which are of an intermediate nature between them, and partaking of the nature of both, and derived from a combination of the general cauſes of the other two; requiring both marſh miaſmata, and infection, ſuch as the autumnal remittent, when it becomes infectious. This laſt genus has gone under different names—as the yellow, malignant, and peſtilential fever.

But beſides theſe general claſſes of fevers, there are innumerable varieties, cauſed by the different temperaments, habits, and conſtitutions of people, and by age, ſex, climate, and modes of life; for fevers will be attended with an inflammatory diſpoſition, in ſome people, and none in others; although the diſeaſe was originally the ſame. This circumſtance is well exemplified in the ſmall-pox, and ſome other ſuch familiar diſeaſes: theſe are differences which require the ſagacity of the moſt experienced practitioners to diſcriminate, and to treat each with propriety; and here if there were any neceſſity for it, as the matter of fact is too obvious of itſelf; it would be very eaſy to demonſtrate the impropriety, and miſchievous conſequences of recommending any one general method, of treating any epidemic, by the ſame round of medicines; without firſt truſting to our ſenſes, in the examination of the ſymptoms, and regulating the plan of procedure accordingly, together with other particulars, equally neceſſary to be known, as the habit of body, &c. Whenever a medical man obliges every perſon in a fever, to go through the ſame circular routine of medicines, we cannot avoid forming a very indifferent opinion of his medical abilities, however dignified he may be; for to practice in this manner, we might as well have writing figures, or machines, to act the parts of phyſicians, as rational beings; for erudition, experience and reaſon, muſt in ſuch practice as this, be ſet aſide as uſeleſs.

An increaſed irritability of habit, with a diminution of vital energy, and of the inherent ſtrength, is to be carefully diſtinguiſhed from an inflammatory diſpoſition, or increaſed vital energy, with ſtrong, full and hard pulſe; but theſe are in ſome caſes ſo intermixed, as to require particular attention in the practitioner. In the low and irritable ſtate, the pulſe is apt to be very quick, but ſmall, from 120 to 135 or 140 in bad caſes; but in the true inflammatory ſtate it ſeldom exceeds from 100 to 120, allowance being made for the age, ſex, and temperament. And as theſe two ſtates require very different modes of treatment, there is the greater neceſſity for being particularly attentive to them. When theſe ſtates are mixed, the predominant one is to be paid moſt attention to in the cure, as we ſhall endeavour to explain hereafter; for to be capable of diſtinguiſhing and treating theſe diſpoſitions properly, are objects of the greateſt conſequence, both in the practice of phyſic and ſurgery.

Notwithſtanding the difference in the diſeaſes produced by miaſmata, from thoſe cauſed by effluvia and infection, it is not uncommon for theſe different cauſes, to operate conjointly, by being applied in different proportions, and to produce fevers of mixed types. In ſome northern countries we ſeldom ſee remittents; but in warm latitudes, intermittents are rare, but remittents are common. It appears therefore, that intermittents are cauſed by the ſmalleſt quantity of miaſmata which is capable of producing a fever, and remittents are cauſed by the greateſt quantities of it, impregnating the atmoſphere ſtrongly. The ſame air however, with ſome variation, will produce dyſenteries, particularly when it is moiſt, and a ſudden cold comes on, obſtructing the perſpiration ſuddenly, and affecting the ſtomach and inteſtines by ſympathy, and ſuppreſſing the perſpiration. Dyſenteries are upon this account to be met with in ſome temperate and healthy northern countries, where neither remittents, or intermittents are ever to be ſeen. But although they are often cauſed by marſhy exhalations, they are ſometimes cauſed beyond their influence. On the continent of America, the farther to the ſouthward, remittents are the more common, and intermittents more rare; but as we approach to the northward, intermittents are more common, and the others leſs ſo, in ſituations reſpectively healthy, or unhealthy. But there are all the varieties and intermixtures of theſe imaginable, in their intermediate degrees; ſo that to diſtinguiſh and deſignate each variety by an appellation would be an endleſs labour, and only add perplexity to a reader who would conſult theſe deſcriptions. It may anſwer better therefore, to keep the principal diſtinctions in view, and not confound the ſubject by uſeleſs refinements, and diſtinctions without end; but to point out the mode to follow nature in her varieties. Upon theſe accounts fevers will not, like minerals, vegetables, or animals, admit of a diſtinct mode of claſſification; and even ſo far as we do divide, and diſtinguiſh them, it is only intended for a faint outline of nature, but not a true repreſentation of all the varieties of diſeaſes; which they are no more like, than a chart of a bay, or coaſt, is like the land, or water which it repreſents. But although ſpeculators, and ſyſtem builders, by getting acquainted with one or two of the many principles and laws, by which the animal economy is governed, erect ſyſtems upon them, which are commonly overthrown by the next enquirers, as eaſily as they were built. The noſological diviſions, and ſubdiviſions, may be carried to infinity; and each different ſymptom, which appears in diſeaſes, may be honoured with the title of an order, variety, or claſs, as has been frequently done, at one time or other; but it would be a very eaſy matter to ſhew, that ſuch minutia, eſpecially where they are uncertain, do more harm than good. For although we may find every particular diſeaſe, very neatly laid down on paper, yet by the greateſt aſſiſtance they can give, when we come to the bed-ſide of the ſick, there is always much difference to be found, from any previous deſcription we have; for diſeaſes are generally very different in nature, from what they are to be found upon paper; for although ſome of the ſymptoms, and appearances, may be always found to be as deſcribed, yet an attentive obſerver, will find obvious difference in every diſeaſe, both general and particular; for in general no two epidemic, or endemic diſeaſes, will be found alike in every thing; and even in the ſame prevailing diſeaſe, when cauſed by the ſame general cauſes, ſcarce two perſons will be found exactly ſimilar. So that a practitioner may be his whole life time, attending the ſick, and not ſee two patients exactly ſimilar in every particular.

Diſeaſes are ſo differently modified, and varied, by different local, and relative ſituations, habits of life, modes of living, conſtitution, age, ſex, and temperament, that the more delicate varieties are infinite, as much ſo, as the appearances of perſons faces differ from one another. For although there are a general likeneſs in the outlines of human faces, yet a perſon acquainted with them, can know one from another among thouſands, or even millions of their acquaintance. This is one inſtance wherein our ſenſe of ſight, cannot be ſo compleatly expreſſed in words, as to convey all the ideas, exactly reſembling the perceptions themſelves. The ſame obſervation is applicable to our other ſenſes, as well as this. Therefore, it is little more than the general doctrines of diſeaſes, and their cures, which are communicable in any language—

therefore, both learner, and teacher, muſt condeſcend to conſult nature, by real practice, and perſonal obſervation; together with every other means of information; for either, without the other, is commonly uſeleſs. For practice without extenſive information, only conſtitutes an empyrick; and large information, without its being modified with practice, generally makes men ſpeculative theoriſts; and very unſafe practitioners, until they learn to bend their opinions to nature herſelf.

Some modern theories and ſyſtems built thereon, are very ſimilar to the ſcholaſtic philoſophy, in the dark ages of Europe, when Monks, and other ſcholaſtics, by heating their brains with the reveries of Ariſtotle, and Plato, in their retirement, and thoſe of ſome of their immediate predeceſſors, erected ſyſtems innumerable thereon, merely out of the produce of their imaginations, without adding one new fact, by well atteſted experiment, or obſervation, to the common ſtock of human knowledge. But what was more ridiculous they formed parties, and quarrelled about theſe cobweb productions, with as much rancour, as the parties for the different colours, in the Roman amphitheatres of old. A meer theoriſt who bends his practice to any hypotheſis, muſt always be a very dangerous practitioner. But thoſe who, by diligent obſervation, and attention to experience, found their reaſoning upon actual facts, coming under their own obſervation, or thoſe of others, on whoſe reports they can depend, proceed as rational practitioners.

Fevers have been divided into intermittent, remittent, continued, and for a general claſſification, this mode may anſwer, and is very near the ſame we have pointed out. Dr. Cullen thought there was ſcarce any fever ſo conſtant, as to be purely continued: becauſe almoſt all fevers have evening exacerbations, riſing higher at one time of the day, than at another. Yet we think the low nervous, or typhus may be called a continued fever—and we believe all thoſe which originate from human infection. The ſpecies of remittents, forms the middle link of the chain between the other two, both in the appearance of the diſeaſe, and the treatment.

Theſe diſtinctions, however, may not be eaſily aſcertained; for fevers are often ſo blended with one another, that it is often very difficult to determine; unleſs by a knowledge of the reigning epidemic, to which of the genera a ſingle fever may belong; for ſometimes intermittents will turn to remittents, or continued fevers—and the continued will turn to remittents. So that the appearance of fevers are as various as that of faces, which though they have ſome of the general outlines in common; yet by an exact knowledge of them, there are always a difference to be found, by good judges in theſe matters; even in fevers of the ſame common origin, owing to age, ſex, conſtitution, habit, and an infinity of circumſtances; ſo that it is very rare to find two patients in exactly the ſame ſituation, in all reſpects. Therefore the ſymptoms preſent, antecedent, and all other ſources of information muſt be had recourſe to; ſo far as a knowledge of the animal economy, and the operation of diſeaſes upon it, will lead us. But it is fortunate, that in theſe intricate caſes of fevers, the ſymptoms taken into conſideration, with other circumſtances of the caſes, will generally ſet us right; and one acquainted with the different parts of medical ſcience, and a good natural capacity, and rational underſtanding, will ſeldom be at a loſs here, with reſpect to the moſt proper means to be purſued, for the relief of the patient, by moderating the ſymptoms, if they run high; lowering an inflammatory diatheſis, or raiſing thoſe who are depreſſed; by removing whatever increaſes the irritability of the habit. And although we may not, when once a fever is formed, be able to overcome it at once; yet its violence, and duration, may be much alleviated and ſhortened.

Remittent fevers in warm, and unhealthy climates, are apt to verge toward the continued form, eſpecially in thoſe of robuſt and full habits of body; and the more ſo if they have lately removed from healthy ſituations—but in temperate latitudes, they are apt to approach towards the intermittent type, unleſs they happen to be combined with infection, or are heightened in their malignity, with noxious effluvia. For in this caſe they may be ſo heightened, as to put on the moſt malignant appearance, with ſcarce any, or very imperfect remiſſions; ſeveral inſtances of which are on record, where violent epidemics, originally of the remittent type, only heightened by infection, appearing, and diſappearing at the ſame ſeaſons, as other remittents commonly do; or otherwiſe we ſhould expect them to continue the whole year round, as ſome other infectious fevers do. For among fevers, we ſee all the intermediate degrees, and varieties from common agues, or catarrhs, to the moſt violent infectious fevers, or even the plague; which may be conſidered as the worſt ſpecies of fevers; and we believe, what is called the yellow fever, in its worſt form, is not far removed from the plague, or peſtilence; though ſome ſymptoms of the latter do not take place in it.

As the cauſes of remittents are ſo numerous, it would be endleſs to enumerate them all; but beſides thoſe which they have in common with agues, and continued fevers, we may notice ſome of the principal ones: among which may be reckoned, a continuance of warm, dry, weather, impregnating the air with vitiated exhalations, exceſſes of drinking, fatigue, or the heat of the ſun, grief, deſpondence, getting cold after being over heated; all theſe appear to abſtract the energy from the body, and leave it over irritable, and weak, and ſuſceptible of being acted on by impreſſions from without, or ſet in motion whatever cauſes may be contained in the conſtitution, whether cauſed by a decompoſition, or diſproportion of the component parts, or by whatever other cauſe. It is probable that ſome of the very fine veſſels may be irritated by their contents, and commotions raiſed to expel the cauſes, as ſeems to be the caſe, when cuſtomary evacuations are obſtructed, as perſpiration. We commonly ſee remittents appear after the greateſt heats are over; and the colder weather obſtructing the perſpiration; while the body is at the ſame time left very irritable by the heat; and in warm climates, people unaccuſtomed to them are not ſufficiently careful to guard againſt the effects of cold air—when very warm, and getting ſuddenly cold, obſtructs perſpiration, over ſuddenly, frequently cauſes diſeaſes, but of this they have no apprehenſion.

Remittents as well as agues, are apt firſt to affect the ſtomach, whether by its ſympathy with the ſurface, or by the diſeaſe firſt attacking itſelf, it is difficult to determine; and the head-ache is in theſe affections, cauſed by ſympathizing with the ſtomach, &c. which is ſo conſtant, and ſoon communicated; that it is moſt likely the ſtomach is firſt diſeaſed, and from thence it is communicated to the head, and other parts by ſympathy; ſo that a head-ache is an almoſt conſtant attendant in remittents, more or leſs, in proportion to the violence of the diſeaſe— For in bad caſes there is a great ſenſe of heat, and uneaſineſs at the ſtomach, with an inclination to vomit, and a general diſlike to all ſolid food; but a frequent deſire for drink, and an almoſt unquenchable thirſt, which increaſes at the acceſſion of the feveriſhneſs, and abates with the head-ache, as it wears off. All this appears to ſhew that the ſtomach is the primary ſeat of the diſeaſe. The paroxyſms here, are not eaſily diſtinguiſhed, unleſs by a pain of the loins, and in all the joints and limbs. The firſt two, or three days of the diſeaſe; it ſometimes has the appearance of a continued fever, with very imperfect remiſſions; ſometimes accompanied with an inflammatory diſpoſition.

The tongue is at firſt whiteiſh and dry, afterwards a browniſh yellow cruſt forms upon it, in the progreſs of the diſeaſe, with a bitter taſte in the mouth, lothing of food, &c.

As an enumeration of all the ſymptoms, would be only perplexing to any reader, we only enumerate a few of the characteriſtic particulars; for although the diſeaſes of the human body vary much in different climates, and countries, yet the greateſt difference is, that in warm climates, diſeaſes of an inflammatory diſpoſition, are more rapid in their progreſs, than they are in temperate countries, eſpecially in thoſe who have lately emigrated from healthy countries, or local ſituations. And after the inflammatory diatheſis is worn off from people of a northern climate, reſiding in the torrid zone, there is a ſpecies of ſpaſmodiac irritability of which they are very ſuſceptible, which remains with them ever after while they remain there—which thoſe born in theſe countries are ſcarce ever troubled with; ſo that an increaſed irritability, firſt of the inflammatory ſpecies, and after the inflammatory diatheſis (diſpoſition) is worn off; that of the ſpaſmodiac ſpecies takes its place. Theſe are very generally the effects of hot weather, and hot climates, upon the natives of more temperate countries—and on the contrary, thoſe who have lately removed from warm, to more temperate, or cold climates, are not apt to be affected with an inflammatory diatheſis, but with the low nervous, or ſpaſmodiac ſpecies of irritability, in whatever diſeaſes they may happen to be affected with. But even in diſeaſes of the ſame origin, and in conſtitutions, very nearly ſimilar, with reſpect to age, ſex, and temperament, one will frequently be accompanied with an inflammatory diatheſis; whilſt another will be more of the low irritable ſpecies—and in others a mixture of the inflammatory, and ſpaſmodiac ſymptoms may be combined in the ſame perſon at firſt, but the inflammatory diſpoſition wears off, in the courſe of the diſeaſe, as it always does, and after ſome days continuance, the low ſpaſmodiac diſpoſition ſucceeds to it, and keeps up the febrile irritation. But where a fever is very rapid in its progreſs, as in plethoric, ſtrong conſtitutions, in warm climates, or where the diſeaſe has been propagated by infection, or by putreſcent effluvia; theſe ſtages are not well marked, or totally imperceptible, or abſent. For the violent inflammatory ſymptoms, if they have appeared, are ſoon followed by a putreſcent diſpoſition; but putrefaction is ſcarce ever a primary ſymptom; and it is therefore, a very improper appellation for diſeaſes—but it has been applied to ſo many varieties of fevers, and ſo differently, by different authors, that it is very often difficult to find out what they meant by it; ſome uſe it to ſignify fevers, in which putrefaction takes place ſoon after death; but that depends ſo much upon the ſtate of the weather, and habit of the perſon deceaſed, and the length, or violence of the diſeaſe, and other circumſtances, that it is but a very indeterminate appellation of any diſeaſe: for a body will ſoon putrefy after death, if the weather is hot. But ſome may be more prediſpoſed to it, than others, as we may often obſerve in ſcorbutic perſons. For if any diſeaſe deſerves the name of putreſcent, the ſcurvy does; for it ſhews an incipient decompoſition, of the conſtituent parts of the human body. And we believe a ſcorbutic diſpoſition increaſes the danger of fevers, whenever one ſo prediſpoſed, is attacked with it; for although it may be denied, that ever putrefaction can take place in living bodies, yet they may verge towards it, even in a ſtate of health; and much more ſo in diſeaſe, and this diſpoſition perhaps, might be what was meant by putrid fevers.

Bile was thought to be a cauſe of remittent fevers, becauſe it is apt from the irritation of the ſtomach, &c. to be ſecreted in larger quantities, and to get into the ſtomach, by the inteſtinal canal being obſtructed, and hindering its paſſage by its natural courſe, or when it makes its way downward, and cauſes diarrheas—or when the ducts are obſtructed by ſtricture, or irritation, cauſing it to be regurgitated into the blood, and appear on the ſkin, and in the urine, and whites of the eyes—this as it ſhews a great degree of irritation inwardly, ſo it is a very dangerous appearance, if it ſhews itſelf early in the diſeaſe; but by which ever of theſe ways the bile takes its courſe, it cannot be ſaid to be a cauſe of the diſeaſe, but only a conſequence of increaſed irritability. For whether it appears in either of theſe ways, or not, the diſeaſe takes its courſe, independent of it, ſo that its appearance can only be ſaid to be accidental, and not a primary cauſe, or certain ſymptom of the diſeaſe. But the reaſon of the diſeaſe being ſolely attributed to it, is, becauſe of its frequent appearance in theſe caſes, and being ſo viſible to ſuperficial obſervers; ſo that although only a conſequence, it is often taken for a cauſe of the diſeaſe; but we do not deny that it may increaſe the fever, and render it more dangerous, as it does in jaundice; for a perſon can never enjoy a perfect ſtate of health, when bile is diffuſed through the ſyſtem, as in that affection, whether ſtagnation, and conſequent putrefaction of the bile ever takes place in the living body, is very doubtful, unleſs in caſes of inflammation, or ſcirrhous of the liver; but of this we have treated already.

On the firſt attack of the fever, its type may be judged of, by a knowledge of the prevailing epidemic, and the violence and duration of the paroxyſm; for in bad caſes it will continue for two or three days, with ſcarce any evident remiſſion. And on other occaſions, very malignant fevers will be concealed, under apparently ſlight ſymptoms, never riſing high, but exhauſting the patient in a very inſidious manner. This often happens where there is infection in the caſe, and appears to be nearly related to the low nervous, or typhous fevers. And when it is complicated with the prediſponent cauſes of the autumnal remittents, it is one of the moſt deſtructive diſeaſes, and requires, of all others, the greateſt attention in the practitioner; and is the fitteſt to try his judgment, of any diſeaſe the human body is ſubject to, as we have often ſeen.

The treatment of this diviſion of fevers muſt be directed by the ſymptoms preſent, the habit of body, and other conſiderations. It will, in many caſes be proper to exhibit an emetic at the very firſt attack; but this may ſometimes be forbidden, by great irritability of the ſtomach, or the appearances of inflammation—and an increaſed irritability, whether inflammatory, or ſpaſmodiac, as either would be heightened by vomiting. But if none of theſe ſymptoms appear, and there is no danger in ruffling the conſtitution by an emetic, as in the phlegmatic, and thoſe poſſeſſing but little nervous mobility; but eſpecially in temperate climates, emetics may be proper; but in warm weather, either in robuſt plethoric habits, or in the irritable, they are extremely dangerous in their operations, either by cauſing an accumulation of fluids in the brain, or exciting troubleſome commotions in the ſyſtem, very difficult to be allayed, and of dangerous conſequences, by ruffling the conſtitution, and cauſing a vomiting which cannot afterwards be allayed. But in the low, nervous, or infectious fevers, of temperate weather, they may be uſed to the greateſt advantage, eſpecially when given very early in the diſeaſe, and upon the firſt ſenſations of uneaſineſs in the ſtomach.

Blood-letting is a remedy, which ſome have totally excluded from the treatment of fevers, becauſe they might have ſometimes ſeen it improperly uſed; and others, from having ſeen it produce very good effects in ſome people, would hold it to be an univerſal remedy for this ſpecies of diſeaſes: but experience will ſhew that both theſe opinions are equally erroneous, and that truth lays between them; for it is only by experience in ſuch caſes, and an accurate and attentive examination of the patient, that it can with any degree of propriety, be either adviſed, or withheld: therefore it is the ſtate of the pulſe, and other appearances, with that greateſt of all bleſſings, common prudence, which is principally to be depended on here. A hard, quick, or tenſe pulſe, pain acroſs the bottoms of the orbits of the eyes, a burning heat at the ſtomach, and a fluſhed countenance, are the common ſymptoms which indicate the uſe of phlebotomy, eſpecially if the patient is young, robuſt, and of a full habit. It often eaſes the head-ache, pain of the eyes, and burning in the ſtomach, before the operation is well finiſhed; and it may be repeated occaſionally, unleſs there is danger of over weakening the patient, and inducing a low fever, with exhauſted ſtrength, and tedious recovery, as often happens from an unguarded, and imprudent uſe of it: or what is worſe, it has often been uſed to ſuch a degree, in the height of the fever, as to exhauſt the patient's ſtrength, to ſuch a degree, that as ſoon as the violence of the fever was over, they have died of inanition, by more of the vital fluid being loſt, than they could ſpare with ſafety. For no one would deny that a perſon in a fever, as well as out of it, may be bled to death; yet a particular claſs of practitioners, have carried phlebotomy to ſuch exceſs, as though they had no idea that ſuch an occurrence could happen. But this is of a piece with random practice in other reſpects; for although the operation is not new, yet in a particular diſeaſe, it is always a diſcovery of ſome import, to determine its propriety. But it is not wonderful, that the ſame perſons ſhould be equally liable to take the two extremes of any thing, when they have not a ſufficiency of judgment, or reaſon to diſcover the happy medium, where truth and rectitude are generally to be found; for nothing but practice, will ever enable a perſon to judge of the pulſe, with accuracy; and particularly the practice of medical ſurgery, which is the only means, by which any thing juſt or true can be learned in the healing art. But ſometimes a depreſſed pulſe, does not appear to indicate bleeding, although it may be very requiſite, and the pulſe would even riſe in the operation. This is moſt apt to happen in plethoric, and phlegmatic habits, who have but little nervous mobility.

Purging is another of the methods commonly uſed, in the treatment of remittent fevers, and one of the moſt generally uſeful of any; for a ſtate of coſtiveneſs even in health, often cauſes a feveriſh diſpoſition, as the irritation produced by the accumulated fœces, always does. But it muſt be much more hurtful in fevers, by increaſing the irritation: therefore evacuating the inteſtinal canal, by mild laxatives, muſt be very proper in all fevers, and experience ſhews it to be generally uſeful. Where the diſeaſe is accompanied with an inflammatory diatheſis, caſtor oil, or the neutral ſalts anſwer beſt of any, by their cooling, ſedative properties, taking off the inflammatory ſymptoms, or at leaſt allaying them. The common ſalts, rochel ſalts, vitriolated tartar, or phoſphoric ſalts, &c. anſwer very well; and to any of them may be added manna, ſoft ſugar, or molaſſes, as they are all nearly the ſame in their operation; and a little vinegar, or lemon-juice to make them leſs nauſeous, and prevent their being thrown up by vomiting; any of theſe may be repeated occaſionally, every two or three days, through the courſe of the diſeaſe, with advantage; or if the ſtomach ſhould not be able to bear them, injections ſhould be given of a laxative, cooling quality, made of vinegar and molaſſes, &c.

In other caſes, where the inflammatory ſymptoms do not run high, and the fevers are more of the low type, the reſinous, and more draſtic purgatives may anſwer better, as jalap, ground with a little loaf-ſugar, to prevent its griping the patient, or two or three grains of calomel may be uſed for the ſame purpoſe with the jalap, if it can be aſcertained that there is no topical inflammation; for if there are, the ſtimulant properties of calomel, would make it a dangerous medicine; as it ſtimulates the whole ſyſtem, and urges phlogiſtic inflammation on to ſuppuration, and abſceſs; a circumſtance we have repeatedly known to happen in ſuch affections, in which the empyrical uſe of mercurials have been unfortunately too general, of late years, in many parts of the world, whether the affections were acute, or chronic. But although they, and other draſtic purgatives, anſwer well to clear the biliary ducts, and inteſtines, where there are nothing of an inflammatory diatheſis, and to remove the irritation cauſed by ſtagnant bile, or fœces, by carrying them off, and producing another action of their own, and oppoſing the diſeaſe, where the conſtitution is capable of bearing ſuch conflicts.

If the diſeaſe is accompanied with a ſimple lax, without any great pains of the inteſtines, or teneſmus, rhubarb or ſome other mild laxative, will anſwer, by evacuating the firſt paſſages, and by its ſtrengthening, or aſtringent qualities, putting a ſtop to the lax; eſpecially if it ſhould be weakening the patient.

Sudorifics, are another claſs of medicines much uſed in remittent fevers; and when well managed, are very uſeful, either in alleviating fevers, or ſhortening their periods. The beſt ſubſtance of this claſs, is the antimonial powder; four or five grains of it may be taken every evening, or oftener. Tartar emetic has been much uſed for the ſame purpoſe, and we have been in the habit of uſing it, for many years, and in all imaginable varieties of forms—but ever ſince the antimonial powder has been prepared at the apothecaries hall, we have found it anſwer much better; and can ſafely recommend it as more certain in its operation as a ſudorific, and febrifuge, and not near ſo apt to vomit, which in an irritable ſtate of the ſtamach, is a very deſirable property, in moſt ſpecies of remittent fevers. But emetic tartar is not ſuch a certain ſudorific, in any way it is uſed, or divided—many other preparations of antimony have been uſed with the ſame intention, particularly a tincture of the glaſs of antimony in wine, (vin. antimoni.) It is a very convenient form when wanted in a fluid ſtate, and in divided doſes, by drops inſtead of weight, but the ſtrength of it is not uniform, on account of the varieties of the wine, with reſpect to the quantity of acid, and ſpirit it contains. On which account, it will diſſolve more or leſs of the metalic part of the antimony; therefore, different parcels of it are ſeldom of the ſame ſtrength. Ipecacuanha has ſometimes been uſed for this purpoſe; but it does not appear to anſwer well, unleſs when it is proper to combine it with opium; as in the dovars powder, (ſpirit of mindereri.) vinegar ſaturated with the ſalt or ſpirit of harſhorn; or the ſaline draught, likewiſe, have been uſed, as they are cooling and diaphoretic—the mindererus's ſpirit is a very powerful addition to the antimonial powder, and the ſaline draught is ſedative, and laxative; and both may have their proper indications to anſwer by turns. Under this head it may be proper to take notice of pediluvia, and the warm bath; both of which are very uſeful in relaxing the ſkin, by removing the ſtricture from it, relieving the head-ach, and moderating the fever; but which ever of theſe may be uſed, warm diluent drinks are abſolutely neceſſary, and keeping warm covered in bed, in order to promote their effects, otherwiſe they will only torment the patients to no purpoſe, cauſing nauſea, and ſickneſs, ſcarcely producing any other effect. The methods of promoting a diaphoreſis, formerly in uſe, by heating ſtimulants and cordials, and the like, are very improper, eſpecially where there are any inflammatory diatheſis.

With reſpect to calomel, as a ſudorific, a purgative, or an univerſal panacea in fevers, which has made ſo much noiſe lately, and reſounded from eaſt to weſt—from India to Europe, and thence to America, and back again with a redoubled echo: we ſhall only obſerve, that the uſe of it in remittents is no diſcovery of this age; for it was well known to Lanciſi, Huxam, and many others, ever ſince the days of Paracelſus, its firſt notorious advocate, as a vermifuge, a purgative, and a febrifuge; ſo that a diſcovery ſo very important as this, has been ſuppoſed was not left for the preſent age, although a great number of its abuſes were. For where any particular part of the viſcera is inflamed, calomel, or any other preparation of mercury, (eſpecially when given in ſuch enormous doſes, as we lately hear of,) will almoſt certainly, by its univerſal ſtimulant properties, cauſe ſuppuration and abſceſs. But thoſe who are qualified to uſe their reaſon, will know how to make a proper uſe of this medicine; and thoſe who do not, may make a very bad uſe of any other active ſubſtance; but particularly of ſuch as this is generally known to be.

It may be proper in this place, to take notice of ſedatives, and antiſpaſmodiacs. The chief of them which are uſed in this diſeaſe are opium, and camphor. Opium is of no uſe towards forwarding the cure; but is very often hurtful, by cauſing coſtiveneſs, and increaſing inflammation where preſent; it ſhould only be uſed in caſes accompanied with want of reſt, in the night, with erethiſm. And where the fever is of the low irritable variety; opium and its preparations may be proper at night, in order to allay the erethiſm, and procure reſt. But we have ſometimes ſeen opium fail of producing theſe effects, eſpecially in thoſe of very irritable and weak conſtitutions; but it is a very happy circumſtance, that where opium fails, camphor almoſt generally ſucceeds—from ten to twenty grains of it may be uſed, two or three times a day, either in the form of julep, or ſimply ground with ſugar, and exhibited in the form of a bolus. It is our duty to recommend camphor, for the great relief it once afforded to myſelf, and often to others under my care, in the low irritable ſtate of fevers. My own caſe was in my third voyage to India, at Fort Marlbro' in the year 1790, being taken with a fever, accompanied with very great irritability, particularly of my ſtomach, which could not retain any thing ſtronger than water gruel; for weak wine and water vomited me immediately: and ſo alſo did Spt. Mindereri. Saline draughts ſtayed with me, but did not produce any viſible effect—an almoſt conſtant, and violent head-ach tormented me three nights and days ſucceſſively —opium could not procure any reſt, or remiſſion of the fever, but made me rather worſe; a bliſter was applied between my ſhoulders, but without any material relief—though rather uſeful than otherwiſe. In this ſituation having ſailed from Fort Marlbro' for China, the day when taken, my ſituation was diſtreſſing; the violence of the head-ach was ſo great, as to make me ſometimes delirious in the night; but when there was any perſon to ſpeak to, by fixing my attention to any one ſubject, my recollection returned. My mate was quite inexperienced in the treatment of ſuch diſeaſes, and my great fear was that of becoming altogether delirious, ſo as not to be capable of directing my treatment. Having hitherto always preſcribed for myſelf, and often for others in dangerous ſituations; and often requeſted my mate to read ſome parts of my books, which deſcribed ſymptoms, and diſeaſes, ſimilar to my own. In this ſituation camphor was thought of, one drachm of it with a few drops of ſpirit, was rubbed with ſugar, and mixed with vinegar and water, of each four ounces, which was all taken in twenty four hours. From the firſt, it was grateful to my ſtomach, when ſcarce any thing beſides would ſtay on it, unleſs gruel, with a little wine and ſugar; which to my taſte then was the greateſt luxury on earth. From the beginning of the camphor, my recovery was gradual, although very tedious, and in two or three days began the uſe of bark; but about a week after was thrown into an ague, as was ſuppoſed by drinking bottled porter, which was a little flat. It was ſoon got over, but my ſtrength did not return altogether, until we were ſome time in China.

There was much reaſon to think this fever was partly cauſed by diſſecting a man who had died of ſcirrhous lungs, without the uſual precaution of oiling my hands, on ſuch occaſions, while the body was warm. For ever from that until taken ill, a conſtant thirſt and feveriſh like, hectic heat, and uneaſineſs attended me, not without expecting a confirmed conſumption.

Another caſe was in Mr. Cooper, our fifth mate—he was exhauſted, and very irritable; he talked incoherently, for two or three days and nights, and ſeemed quite delirious; but when any perſon was with him, he would anſwer a queſtion ſenſibly; opium ſeemed to increaſe theſe ſymptoms; ſpirit of mindereus, and antimonials, were tried without any good effect. In this ſituation we had recourſe to camphor, with the happieſt effects; for in a few hours he got eaſier. He lay quiet and ſlept comfortably, ſpoke only when neceſſary, and took drink when offered to him; and a gentle diaphoreſis appeared all over him, and he recovered gradually. Both theſe caſes were attended with a conſtant erethiſm, or morbid ſenſibility—nothing can ſet the virtues of camphor in a ſtronger light. We have ſince uſed it in ſimilar affections with as great ſucceſs on this continent.

Bliſters are very often uſed in remittents, as well as in other caſes of fevers; they are thought to produce their beſt effects, by the ſenſations they excite, overcoming the diſeaſed actions cauſed by the fever, as a greater ſenſation overcomes a leſs. But however they act, they are often of great uſe, either in overcoming local inflammations, or morbid irritability when applied directly over, or near the part affected: as in violent head-aches, or delirium, applied between the ſhoulders, or in caſe of great pain, and uneaſineſs of the ſtomach, with a conſtant vomiting; applied to the pit of the ſtomach, they are often of ſervice; and by the ſtimulus they give to the ſkin; they are often uſeful in promoting a criſis, by taking off the uneaſy irritation internally, eſpecially in the low ſpecies, or ſtages of fevers. But we believe they are improper where there are a general inflammatory diatheſis, accompanying fevers of any ſpecies; becauſe if the inflammation is general, any thing increaſing irritation, will add to its violence, and may produce ſuppuration, gangrene, &c.

The Peruvian bark, is another medicine of great importance in remittent fevers, it appears to produce its effects, by fortifying the conſtitution againſt the low ſpaſmodiac irritability, which keeps up the habit, or the diſpoſition to feveriſh paroxyſms; from its tonic powers, ſtrengthening and bracing the whole ſyſtem of veſſels, and moving parts; it is particularly uſeful in diſeaſes of a lax, weak, and irritable habit of body; and in moſt diſeaſes where the patients are much reduced, to a weak, languid or irritable condition: but it is inadmiſſible, where there is a ſtrong, plethoric, and inflammatory diſpoſition, and conſequently never can be neceſſary, at or near the ſame time with phlebotomy, for where the one is indicated, the other is improper; for weakening and ſtrengthening the actions of the body, never can be neceſſary at the ſame time, although they may be both neceſſary in different ſtages of the ſame diſeaſe. For in remitting, or other fevers, there may be ſo much of an inflammatory diſpoſition at firſt, as to require bleeding; and afterwards the bark alſo to compleat the cure, by allaying irritability, &c.—We have ſeen a violently rapid inflammation, cauſed by the prick of a needle, in the extenſor tendon of the index finger, in an old, irritable perſon, ſucceſsfully treated by wine, bark, and opium, in full doſes, with fomentations and poultices. Here they muſt have acted by obviating irritation and allaying irritability, or rather in ſtrengthening the ſyſtem, againſt the irritating cauſe, where no other method could ſucceed; for evacuations were inadmiſſible through weakneſs.

Bark is likewiſe of great uſe, after a fever is overcome, in reſtoring ſtrength and appetite; and is often uſed for this purpoſe—being a medicine of great efficacy, and one of thoſe edge-tools of medicine, which the ignorant ſhould not make free with; but it is often abuſed, by applying it to improper purpoſes, and adapting preſcriptions to the names of diſeaſes, and not to their ſtates. The firſt introducers of it were intemperate in its praiſes; whilſt others, either through prejudice, imperfect experience, or miſtake, have totally condemned it—but in this, as in all other extremes, they are both wrong. But what ſeems unaccountable is, that although bark has been known for about 150 years in Europe, as a medicine, there are many contradictory accounts of its effects, even to the preſent time. On the continent of Europe, it is very little uſed, and even in the Netherlands, where they have agues, and remittents, annually; but even in Britain, one practitioner will, in a moſt unqualified manner pronounce that bark, wine, and opium, are ſpecifics in all fevers, and in all their ſtages; bacauſe perhaps they had ſeen ſome low nervous fevers cured by them, or others which were only kept up by irritability, after the inflammatory ſtage was gone.

Where there is great weakneſs, and irritability of the ſyſtem in fevers, bark is in general proper, as it imparts ſtrength, and firmneſs, and takes off irritability, and ſtrengthens the habit of body againſt the diſeaſe. But when there is phlegmonous inflammation preſent, it is improper; although it often ſucceeds in the eryſipelas.

From what has been ſaid, of the uſe, and abuſe of the moſt powerful, and beſt medicines in remittents, every one may judge for themſelves, and if they are experienced in judging of different conſtitutions, and the effects of medicines, they will ſeldom be at a loſs in determining what is beſt to be done. But there are ſome difficult, and intricate caſes, which occur in practice, where the true ſpecies, or type of the fever, may be difficult to aſcertain; and in theſe caſes, we would adviſe a cloſe attention to the appearances, and ſymptoms; and thoſe who are poſſeſſed of a ſufficient degree of medical philoſophy, will ſeldom be at a loſs which courſe to take, either to relieve the ſymptoms, or to cure the diſeaſe in temperate climates. But where the progreſs of the diſeaſe is not very rapid, the progreſs of nature may be obſerved, and the means ſhe uſes to cure, may be promoted, whether by urine, or perſpiration. But ſuch timid practice will not do ſo well, in warm climates, nor often in the autumnal diſeaſes of the temperate ones, eſpecially on large continents, where the heats of the ſummers go to ſo much greater exceſs, than they ever do in iſlands. Therefore, we muſt in theſe caſes, be more quick in determining and acting with firmneſs, and circumſpection, and oppoſe every ſymptom in its firſt appearance, and not delay for concoction of humours before they are diſcharged, although there may be an inflammatory diſpoſition to reduce, before bark is admiſſible.

To conclude—If the patient is of a ſtrong, plethoric conſtitution, with a tenſe, hard pulſe, or an appearance of an inflammatory diatheſis, bleeding may be neceſſary;

but in order to determine upon this, we muſt judge of the patient out of the paroxyſm; for in it, the pulſe is always very quick, tenſe, and full, and the operation may be directed by the ſymptoms. After bleeding, if neceſſary, it may be ſometimes proper to give an emetic, to clear the ſtomach, eſpecially if there does not appear to be any inflammatory, or increaſed irritability; but if that is the caſe, it is better to carry off the offending matter downwards, either by mild laxatives; or this intention is ſometimes anſwered by the antimonial powders, at the ſame time with their ſudorific action; for they vomit and open the bowels, as well as promote a perſpiration. But if the patient is coſtive, as is commonly the caſe in fevers, with a vomiting, or great irritability, or inflammation in the ſtomach, then injections muſt be had recourſe to, as purgatives in this caſe would not ſtay on the ſtomach.

The antimonial powder is one of the moſt generally uſeful, as a febrifuge, with warm diluent drinks, and mild laxatives; and in caſe of reſtleſſneſs, ſmall opiates may be given with it at night; and in caſe the opium will not procure reſt, as is ſometimes the caſe, or when the antimonial will not reſt on the ſtomach, to produce any effect; then camphor may be had recourſe to, in order to allay the irritability of the ſyſtem, ſometimes with the beſt effects. And bliſters may ſometimes be of uſe, to relieve the head-ache, or the low comatoſe ſtate of fevers: when applied between the ſhoulders, they may be of great ſervice, or upon the pit of the ſtomach, in caſe of great uneaſineſs there, or over any local pain, or internal irritation. And as ſoon as all appearances of an inflammatory diatheſis is over, the bark may be had recourſe to, with wine, or other cordials, to take off the irritability, and ſtrengthen the habit againſt the attacks of the diſeaſe; but in ſome young people, if they are not much weakened by the diſeaſe, bark may not be abſolutely neceſſary, although the recovery without it, will be more ſlow than if they uſe it.

In the recovery from a fever, we muſt be very cautious of indulging in exceſſes of any kind; but particularly, againſt getting cold, for fear of a relapſe; for the body is commonly left in ſuch a weak, irritable ſtate, ſo that a ſmall alteration may affect it: but theſe precautions ſhould not be over ſtrict, as one may err on that ſide likewiſe.

The ſalutary effects of cold air, and of cold water, have lately been highly recommended, in the low typhus ſtate of fevers; but although they are not long in uſe in modern practice, they have been often miſapplied, in common with every newly diſcovered remedy, by being indiſcriminately recommended and uſed in ſome caſes; but this is only an old remedy lately revived.

In the beginning of fevers, and where there is an inflammatory diſpoſition, we believe we may reſt aſſured, that cold water uſed either as drink, or in the way of cold bathing, is very improper; for although cold applied to any part of the body, appears to operate as a ſedative at firſt, yet as ſoon as the firſt impreſſion is over, there is a glowing heat, from the vital energy being accumulated by the cold, and as ſoon as that is removed, the ſolids act with a redoubled vigour, and increaſed energy, and haſten inflammation rapidly. And from this conſtant effect of cold bathing, it is eaſy to underſtand its effects in the languid, and depreſſed ſtate, which ſupervenes in the advanced ſtages of moſt fevers, when a low irritable ſtate comes on, and bark, wine, or opium are proper; then there is no doubt, but cold water, as drink, and alſo cold bathing, or even waſhing the face and hands, or the feet with cold water, may be uſeful, in removing that ſtate, which ſo much depreſſes the ſtrength, and keeps up diſeaſe. And cold air, as being an inferior degree of an application, of the ſame nature, may be of advantage—under the ſame circumſtances, a conſtant continuance of a temperate air, may be much better in inflammatory diſeaſes, than either warm or cold air, as we ſee exemplified in the ſmall pox, and meaſles. But when it goes below an agreeable temperature, the energy is accumulated; and expoſure to a warm temperature, will ſtimulate the ſyſtem into ſtrong action, and heighten the inflammatory diſpoſition greatly.

There are ſeveral caſes on record, where cold air, and cold water have been of eminent advantage in fevers; but all of them are in thoſe, which had continued for ſome time previous to the application of cold; and of conſequence, even ſuppoſe there had been an inflammatory diatheſis in the beginning of the diſeaſe, it was worn off by that time, and the low, feveriſh irritability only remained; for which the application of cold would be very proper, by adding vigor to the vital functions after its uſe. But others, unfortunately, on hearing of the advantages gained by cold bathing in fevers, applied it indiſcriminately, in the beginning, or the inflammatory ſtages; and ſo applied, it would certainly do harm, by heightening the inflammation——as it is ſaid the North-American Indians do with their children, when they are taken with the ſmall pox, they plunge them into water, to cool the heat of the fever; and by that means heighten the inflammatory tendency of the diſeaſe, and cauſe it to be very fatal to them. The ſame practice is followed by many other uncivilized nations, and with the ſame effects.

The giving of cold water to drink, in fevers, is ſaid to be a common practice in Spain, Italy and in Sicily, and many other warm countries; and even ice water: but if they give it indiſcriminately, is certainly often hurtful; but with the proper precautions it may, there is no doubt, be of uſe; for their fevers there, muſt of neceſſity, be ſometimes accompanied with an inflammatory diſpoſition, and then cold water and ice, would do harm, by aggravating the inflammation; but when that ſtate is over, it may be of uſe; and there is no doubt but in this low ſtate of fevers, its advantages have been eſtabliſhed in practice.

Dr. Ruſſel in his hiſtory of Alleppo, ſays, "it is a common practice there, with the native phyſicians, to ſtrew the leaves of trees in the chambers of the ſick, and about their beds; and to ſet a veſſel of cold water by them, with cucumbers in it, with orders to hold one of them in their hands until it grows warm." This is one way of applying cold in fevers, and probably it may be ſometimes of uſe——wet clothes may be applied to the head and breaſt, as is practiſed by ſome, and removed when they get warm; this would be a delicate enough way of applying cold water, and may be eaſily ſet in practice; but it requires the ſame precautions as the others, leſt it ſhould be uſed improperly, by accumulating the energy, to break forth with redoubled force.

In order to promote the recovery from fevers, the beſt effects are to be obtained from a pure air, and gentle exerciſe, frequently repeated; but not to ſuch exceſs, as to become fatigueing; for it ſhould ceaſe on the firſt ſenſation of uneaſineſs, leſt it exhauſts too much, &c. Errors are, however, not ſo apt to be committed in this reſpect, as in the total neglect of exerciſe, in the weak ſtate, which remains after fevers; neither does exerciſe ſucceed well, unleſs in the open country. Walking, or riding is the moſt powerful, of all known ſtrengtheners, and reſtoratives, eſpecially for thoſe who are apt to be low ſpirited. Freſh air, and exerciſe, anſwers equally the ſame, in the recovery from a flux, or other acute diſeaſes, as after fevers. Somewhat relative to this, we have generally obſerved of people, when taken with any of theſe acute diſeaſes at ſea, or at leaving land, they ſeldom recover their ſtrength; although they may be three or four months at ſea, until they enjoy the land air, which after the tedious uniformity of the ſea air, is exceeding agreeable, as a change to perſons in a weak condition.

Alſo, thoſe who have been much weakened by any acute diſeaſe on ſhore, as a flux or fever; even although the air of the place may be tolerably healthy, ſeldom recover their ſtrength, until they are ſent on board their ſhips, in their convaleſcent ſtate, and expoſed to the pure air of the ſea, in caſe the ſhip ſails ſoon after; ſo that even the change of air, change of ſcenes, and of company, provided they do not get into very diſagreeable ſituations, or bad air, are of more utility than they have often been thought. We can recollect the effects of an uniformity of air, ſcenes, and amuſements, even in health, in the pleaſant air, and ſteady breezes of the trade winds, the uniformity, and ſameneſs of even that pleaſant weather, has often been tireſome. So that we have been glad to ſee a thunder ſtorm, or a ſquall, for ſake of the variety, in our tedious voyages, between England and India. And there are ſufficient reaſon for thinking, that changes are of great advantage to convaleſcents, and ſhould be always had recourſe to, when practicable, even although the air ſhould be no better, which they remove to, than that which they left: for the love of novelty, and variety, appears to be a natural propenſity in mankind. And there is no room to doubt, but a variety of food and medicines, are as neceſſary, as a variety of air, in order that the body may not become habituated to any one mode of life; ſo that a change, when unavoidable, would then be more ſenſibly felt. Celſus appears to have been of this opinion, as we may ſee by his ſhort, but celebrated directions for the preſervation of health; and the ſame is very applicable to the reſtoration of health, and ſtrength. Peruvian bark, or other medicine, if too long continued, loſe their efficacy, ſo far, that even an increaſe of the doſe, does not compenſate for the habit. Therefore, one article of any claſs of medicines, ſhould be changed for another, whoſe effects are nearly the ſame—a fortnight is in general, long enough to continue any one medicine, until its place ſhould be ſupplied with another; and after a week or two, the former may be returned to, in caſe the diſeaſe is obſtinate; but larger doſes will be required, in order that it may be as active as at firſt. Theſe rules will be found equally applicable to moſt of the ſtrong medicines, to prevent their efficacy from being loſt, before they have brought about the neceſſary changes in the conſtitution.

Where there are not thoſe varieties of weather, which are cauſed by ſummer and winter, hot and cold weather, as in the countries between the tropics, thoſe who are weakened by diſeaſes, find the greateſt benefit by removing to colder countries, or to elevated, mountainous and hilly ſituations, if there any are ſuch in their neighbourhood, for the recovery of their ſtrength. This is often practiſed by thoſe who reſide in the Eaſt, or Weſt Indies, and always with the wiſhed for effects; unleſs they are already too far gone, before they make the change, and worn down with age and diſeaſes; for in this ſituation they often die before the alteration can produce any good effect. But thoſe who are young, or middle aged, often recover ſurpriſingly, by the ſea air, even although they may require to be carried on board their ſhips—in the courſe of a few weeks they often grow ſtrong, before they get to the end of their voyage, and acquire new health, ſpirits, and vigor by the change of air. All theſe conſiderations are very much in favour of a change of air, in diſeaſes attended with chronic weakneſs; particularly in the inhabitants of warm climates. Diſengaging the mind from ſerious purſuits, and anxious cares, is alſo an object of great importance, in thoſe who are reduced by ſickneſs, as the exerciſe of the mind, is known to be more weakening, than that of the body. Therefore, leaving the cares of life behind, if poſſible, ſhould always be practiſed in excurſions in purſuit of health; and this we believe is a very principal part of the cure; and in ſome caſes may be done at a moderate diſtance from home.

With reſpect to food and drink, the patient's taſte is generally to be conſulted. But as patients often conſult their phyſicians, with reſpect to regimen; and as the phyſician may ſometimes be acquainted with ſome more ſuitable articles than the patients, and different ways of preparing them; his opinion may be of ſome uſe, even in this matter. Soups, and broths, are commonly very grateful to weak patients; and we know from perſonal experience, that they may be often taken by a patient, when too weak to ſwallow any ſolid animal food, as roaſt beef, or ſtakes, &c. Sago well boiled and mixed with a little wine, or ſugar, and nutmeg, or cinnamon, is very nouriſhing to thoſe who like it; and rice pudding is very agreeable, to moſt people. The choice of animal food, whether beef, veal, mutton, &c. may be left to the patient, as the beſt directory; for whatever they prefer, generally agrees beſt with them; and there is no peculiar virtue, or impropriety in one, more than another. Chicken, fowl, and veal or fiſh, are generally preferred by the ſick, or weakly people, and commonly anſwer well.

Much the ſame regimen, or food, exerciſe, and air, which is ſuitable in the recovery from fevers, is alſo very proper in the recovery from dyſenteries: as bark, and the ſame reſtorative medicines, and cordials, as genuine wines, uſed in moderation, and diluted with three or four times their quantity of water; and all depreſſing, or immoderate paſſions are to be avoided, as fear, grief, anxiety, anger, or envy—for they all have a tendency to hurt the conſtitution. The depreſſing paſſions, by weakening the circulation, particularly in the abdominal viſcera, are very apt to cauſe obſtructions in the liver, ſpleen, and meſſenteric glands. For there is nothing more common, than to find obſtructions of theſe parts, in the diſſections of thoſe who have died in this way. And we believe they may be oftener the effect, than the cauſe of theſe paſſions.

Some people who are of a very irritable habit, will be put into a vomiting of bile, by a ſudden fit of anger, which plainly ſhews the influence of the mind, over the functions of the liver, and ſtomach, by the ſtimulus which is communicated to the liver, from the ſtomach, and inteſtines. The cauſe of this appears to be the ſympathy between the other parts of the body, and the ſtomach; which is very conſtant, and viſible at moſt times. Anger produces a diarrhea in ſome people, and the conſent between anger, and the increaſed ſecretion of bile are obvious. But after theſe parts are ſtimulated ſo ſtrongly in this manner, by mental or external impreſſions, their own native ſtimuli, loſes all its power over them, as their energy is exhauſted, by the greater ſtimulus of paſſion beforehand; and conſequently, as ſoon as that is removed, they will become quieſcent, and inactive. Hence obſtructions follow, and very often ſcirrhous tumors, and irreſoluble induration; either the violent, or depreſſing paſſions, are not only unfavourable to the recovery from fevers of different varieties, but they alſo very much conduce to bring them on, as low living, and depreſſion of ſpirits, fear, and anxiety, are very apt to expoſe thoſe, upon whom they prey, to be attacked with infectious fevers, of the low nervous ſpecies; which rages in hoſpitals, priſons, ſhips, or cloſe, and ill aired manufacturing towns, in the habitations of the poor. And the remitting fever, and dyſentery, when they are rendered infectious, as they often are by confined air, in ſuch places likewiſe, are more apt to attack people who are depreſſed in the ſame manner, as Zimmerman obſerves.

Here is a caſe of the remittent fever, as it appeared on the weſt coaſt of Sumatra, near Fort Marlbro', the moſt unhealthy ſettlement of the Eaſt India Company; it is moſtly a woody, and uncultivated country.

Royal Charlotte, February 4th, 1785—John Greene, caulker, aged 30, was on ſhore, aſſiſting at having the company's pepper weighed, and ſent on board, which we were receiving from the reſident factor, at that place—before this, he was healthy, and temperate in his way of living, and had been bred to the ſea. On the evening of the third of February, he came on board, ſick with a fever, with which he was taken two days before, but could not ſooner get on board, the weather being ſtormy; his pulſe was weak and rather ſlow, his countenance pale, and he was affected with laſſitude, and pains all over his limbs, and body, and an obtuſe head-ache, and dry tongue, with a bitter taſte in his mouth; he had an emetic in the evening, with directions to promote a perſpiration by warmth of bed, &c. On the fourth he was firſt ſeized with a violent pain of his head, which was ſoon ſucceeded by a purging, and vomiting, and we ſuppoſed he was taken with a flux, as it had been very prevalent with us for ſome months before on that coaſt—he had an ounce and an half of glauber ſalts; and in the evening he had ſixty drops of antimonial wine, and as much paregoric elixir, to be taken at twice. On the 5th he appeared eaſier, and had reſted well in the night; his lax at this time was not much trouble to him; he had antimonial powders every four hours, during the day, and at night he had fifteen drops of laudanum, and forty of antimonial wine.—9th, the ſymptoms were all much abated, and there appeared a remiſſion of the fever; but in the fore part of the night, he had a paroxyſm for ſome hours, and it had again returned towards morning, but only remained for a ſhort time—by this we learned that we had an irregular remittent to deal with. The 5th day of the diſeaſe, and the third from his coming on board, he had a decoction of bark, and Port wine, four ounces every two hours during the remiſſions; and in the paroxyſms, four grains of antimonial powder, every three hours—7th, the lax was abated, he went on with the bark and wine during the remiſſions; after which he had one drachm of the powder, in a glaſs of wine and water, every two hours, as he was much reduced in ſtrength, yet it ſtayed on his ſtomach—he had a ſlight acceſſion of the fever in the evening as before, but no more of the morning paroxyſms, and appeared to be getting better, but as he was ſomewhat coſtive, he had a few grains of rhubarb, and went on taking the bark and wine.—9th, the ſame until the afternoon, when from what cauſe we could not diſcover, he was ſeized with a pain of the head, and ſickneſs and oppreſſion at the ſtomach, and dimneſs of ſight, and great difficulty of breathing; the extremities were cold, and his countenance was pale, like that of a dead perſon—in this extremity his feet and legs were put into warm water, and well rubbed with coarſe woollen clothes, and he had a draught of half a drachm of cordial confection, and ten grains of ſalt of hartſhorn, in two ounces of ſimple cinnamon water, and was put into his hammock again, and he had a bliſter applied between his ſhoulders, and one to the ſoles of each of his feet. He actually appeared to have departed, and was for ſome minutes without any appearance of life—his pulſe became again perceptible; his recovery appeared rather miraculous, the vital ſpark ſeemed to have been totally extinguiſhed, his extremities gradually recovered their warmth, and his countenance aſſumed a more lively appearance, and in the evening he complained of no other pain, than that cauſed by the bliſter on his back; but he was extremely weak and faintiſh. On the 10th, he complained of not being able to ſleep, by reaſon of the pain of the bliſters, on his back, and feet, which had raiſed and diſcharged well. On the 11th, he had no more return of the paroxyſms, of the fever; he appeared more lively, and his pulſe quite regular, but his feet were much pained by the bliſter, and he was directed to take the bark in as large quantities as his ſtomach would contain, in decoction with wine. On the 12th, he continued to get better, the bliſter on his back continued open, and diſcharged very well, and he continued the decoction and wine.—13th, he had no more feveriſhneſs; he continued the uſe of the powder, of bark and wine, in ſmaller quantities, with ſome doſes of rhubarb, to obviate coſtiveneſs, at proper intervals, until the 21ſt, when he returned to duty.

The caſe following, will ſet the premature uſe of the bark in the remittents of hot, and unhealthy climates in its true light; but ſuch was the faſhionable practice of the times, principally from paying too great a deference to the opinions of ſome late practical writers, particularly Cleghorn, Clark and Lind, who are by much too unguarded in their recommendations of bark, at an early ſtage of theſe fevers, to the deſtruction of many whoſe phyſicians too implicitly follow thoſe practical writers, as they were all men of ſome reſpectability.

January 4th, 1785, Joſeph Dingley, aged 18 years, of a very meagre habit of body, he had been at ſea moſt part of his life; his employment being in the galley—he was generally very dirty in his clothing. He firſt complained of great pain in his head, and loins, he was very hot, and thirſty, pulſe very quick, and his tongue furred. As bleeding was almoſt totally condemned at this time in warm climates, even in the moſt robuſt and inflammatory diſpoſitions; the ſtate of the fever was the only uſe to be made of feeling the pulſe. He had powders prepared from tart. emet. every two or three hours, with barley water for his common drink; and at bed-time a ſmall anodyne draught.—5th. He had an imperfect remiſſion, and a paroxyſm about the ſame time as the day before, but leſs violent: as his ſtomach ſeemed to be foul, he had an emetic, after the acceſſion of the fever was over, and one ſcruple of dovers ſudorific powder at bed-time, and had ſome reſt, and was better next day.—On the 6th, and third of his diſeaſe, he appeared in the morning to have a remiſſion, and was ſet to the uſe of bark, a drachm of it every two hours in port wine and water, equal parts; ſo that by the time of the evening acceſſion of the paroxyſm, he had taken an ounce of bark, and probably too large a proportion of wine: the paroxyſm continued with increaſed violence, for upwards of two hours, and at night he had another doſe of Dover's powder.—7th. He continued the uſe of the bark and wine; at four in the afternoon, the paroxyſm came on very violently: on the acceſſion he got ſome of the antimonial powder, but he had no proper remiſſion, after this ſevere fit; he had again a little of the Dover's powder at bed-time, but was more feveriſh all night than before.—On the fifth day of the diſeaſe, the pains of his head, and back, and the feveriſhneſs in general was ſomewhat abated; he was now ſet to take bark more frequently—a drachm of it every hour in wine and water; but at noon he began to nauſeate and to vomit it up again; his pulſe now was very quick and ſmall; he left off the bark, and had a bliſtering plaiſter applied between his ſhoulders, and every hour or two, half an ounce of lemon-juice, ſaturated with the vegetable alkali, in an ounce of ſimple cinnamon water, and four grains of antimonial powder; but at four in the afternoon, he was taken with a rigor, which laſted until ſix, very violently; he became delirious, and was convulſed, his pulſe was 120; his feet and legs were put into warm water, and well rubbed and bathed, and afterwards covered up in his bed; but he departed at ſeven—he was exceſſive hot juſt before he died, and we could feel the electric pungency, on feeling his pulſe. He never could be brought to perſpire freely, and ſoon became very putrid. The body was ſo very offenſive next morning, that ſome of the ſeamen who went near it, were taken with a naſea and vomiting; for which ſome of them took emetics. The others who died on this coaſt, ſoon became putrid alſo, the weather being very warm, and often rainy at this ſeaſon, with high winds at times.

Remarks.—After having had more experience in the diſeaſes of hot and unhealthy countries, we cannot avoid obſerving, that by a different mode of treatment, this boy's life might have been ſaved; but this, and ſome other ſimilar caſes, made me more cautious in the early uſe of bark, and wine, and the large uſe of them in any caſes. It is very probable that if the neutral ſalts, or caſtor oil had been given every ſecond day, and antimonials with warm diluent drinks; for the fourth or fifth day of the diſeaſe, is generally as ſoon as bark and wine can be given with ſafety, and then a more ſparing uſe of it anſwers beſt; for theſe remittents of warm climates, when they attack northern conſtitutions, ſoon after their arrival, are generally accompanied with an inflammatory diſpoſition, for the firſt three or four days, and bark and wine heightens it; but the neutral ſalts and antimonials alleviate it.

The ſubjoined caſe of a remittent fever, is from my laſt voyage. It will ſhew the effects of a different method of proceeding, and the utility of practice in theſe dangerous diſeaſes.

Wampoa in China, October 15th, 1790.—James Murray, chief mate's ſervant, aged 23 years, of an active diſpoſition, never at ſea before this voyage, complained of head-ache, ſickneſs at his ſtomach, and the other ſymptoms of a fever. He had an emetic immediately, and at night an antimonial draught, and water gruel warm in order to promote a perſpiration, and was directed to keep well covered with his bed-clothes in the night.—16th, the fever was much the ſame, and the head-ache, and ſickneſs at his ſtomach continued, and he complained of griping pains in the bowels, and was rather coſtive; he had an ounce of glaubers ſalts, with ſome vinegar in it to make it leſs nauſeous, and at night the antimonial.—17th, the head-ache was a little abated, and he complained of ſoreneſs all over him—his ſkin was yet dry and ſhrivelled; he had antimonial powders three times in the day, with warm diluent drinks, and a few drops of laudanum at night: he was ſometimes delirious in the night, but towards morning his ſkin became ſoft, and moiſt, and a perſpiration broke out.—18th, he was very low, and weak, and complained of head-ache, his pulſe was ſmall, and as he was yet coſtive, he had a ſaline purgative; and in the evening he was taken with a rigor, and vomiting, and pain at the pit of the ſtomach; this was ſucceeded by heat and ſickneſs, &c. and after this paroxyſm, he was ordered a decoction of bark, to eight ounces of which, one ounce of the tincture was added, and directed to take three ſpoonsful of it every three hours, after the operation of the purgative, and in the abſence of the paroxyſms.—19th, he began the bark mixture in the night, and thought his ſtrength a little recruited; but the oppreſſion at the pit of the ſtomach, and pains in his bowels continued. He had another acceſſion of the fever, and a vomiting of bilious matter, accompanied with a hardneſs and pain of his ſtomach, and great irritability of it. He refuſed every thing offered him, either as food or medicines. The laſt purgative he had, operated three or four times. He had a ſaline mixture. and tincture of opium, to compoſe his ſtomach; and he had a bliſtering plaiſter applied to the pit of the ſtomach, with good effect.—20th, he was much relieved, the uneaſineſs at his ſtomach greatly alleviated, and had a perfect remiſſion of the fever; he was ordered ſix drachms of bark, and two of ſnake root, to be taken with port wine and water, in the courſe of twenty-four hours—he had but a ſlight paroxyſm this day.—21ſt, he had a good night's reſt, and was tolerably free from fever, but very weak; he was ordered to go on with the medicines.—23d, he was troubled with a retching to vomit, but continued to get better; for his ſick ſtomach he had two ounces of lemon-juice, ſaturated with ſalt of tartar, and with a few drops of laudanum, to be taken occaſionally.—24th, he caught a cold, and had a cough; for which he had an antimonial, but continued the uſe of the bark, and got well, and recovered his health and ſtrength in a few days.

Remarks.—In this caſe, we may obſerve the effects of a different method of treatment. Here there appeared not much neceſſity for bleeding, ſo far as we could judge by his pulſe, and the appearance of the countenance, or other ſymptoms. The irritability of his ſtomach did not appear to be great at firſt, nor any appearance of inflammation: the laudanum given with the antimonial at night, was not ſo much intended to cauſe reſt, as to aſſiſt the antimonial in its ſudorific operation; but in caſe the warm drinks, and antimonials cauſe a perſpiration, and removes the ſtricture, and dryneſs of the ſkin, we would rather not give any preparation of opium, in the firſt days of the diſeaſe, at leaſt while the fever is high, or any inflammatory tendency preſent. As for the antimonials, they are the moſt generally uſeful, of any other known medicine, in the beginning of fevers, where the ſtomach will retain them, even in very ſmall doſes. Purgatives are abſolutely neceſſary, as the neutral ſalts, and caſtor oil, in the beginning of the cure, as they clear the inteſtines of their irritating contents, and are of a ſedative, or cooling quality; therefore in remittents, or indeed any other fevers, they ſhould ſcarce ever be diſpenſed with, every two or three days, where the ſtomach is irritable. The bark in this caſe appeared to have been begun ſoon enough, although it was the end of the fourth, or the beginning of the fifth day; and we are perſuaded that giving it ſooner, in large quantities, is very ſeldom ſafe; but its effects may be tried firſt, in ſmall quantities, and if it ſhould appear to increaſe the fever, with ſtricture of the ſkin, and uneaſineſs, it is improper.

A caſe of a remittent fever which was contracted on ſhore at Fort Marlbro'. Being taken at the ſame time with a very dangerous fever myſelf, and therefore not able to pay attention to him, being unable to viſit him only once or twice, and my mind, as well as my body, being in a very weak, and languid ſtate. We regretted this young man's death the more, as he was the only one loſt during the voyage, by the diſeaſes of the climate, in a ſhip's company of 140, in twenty months to St. Helena, Bencoolen and China, one of them the moſt unhealthy ſettlements belonging to the company; and China is none of the beſt to Europeans.

A caſe of remittent fever, in which wine and bark were uſed prematurely.

Martin Harris, third mate's ſervant, aged 27 years, rather of a meagre and irritable habit of body, he had lived at the tavern during our ſtay at Bencoolen, which was about a month, and ſometimes got drunk, but the whole time he had no bed, but ſlept ſitting or reclining on chairs, and often in the open air, in a piazza, (or varanda.)

July 22d, 1790, he came on board very ſick, he complained of a nauſea, and ſickneſs at his ſtomach, and of ſevere pains of his head, and of his back and limbs—his pulſe and other ſymptoms did not appear to require bleeding, his tongue was dry, and a bitter taſte in his mouth; he had immediately an emetic, and at night an ounce of vinegar, ſaturated with volatile alcali, and a few drops antimonial wine, as a ſudorific; he had ſome reſt in the night—and on the 23d, his pains were eaſier, but the feveriſh ſickneſs ſtill continued, but his pulſe was moderate; and as his bowels had not been opened by the medicines, he had an ounce of glaubers ſalts, with the juice of a lemon to make it leſs nauſeous—and at night again the draught with antimonial powder. On the 24th, he had a perfect remiſſion, and was almoſt free from fever, but complained of weakneſs and giddineſs, but would not keep his bed—this day, the third from his coming on board, but the fourth or fifth of his diſeaſe, he had a fair remiſſion with weakneſs. He was ordered a drachm of bark every four hours, in wine and water, as a trial of it; but he had a reſtleſs night, and was very feveriſh—and on the next day, the 25th, his eyes were obſerved to have a yellowiſh tinge, and he complained of pain and tenſion of the lower belly; now it was very plain the bark had been given rather too ſoon; it was alſo diſcovered that he had got a quantity of bark and wine into his own poſſeſſion, of which he took indiſcriminately in large quantities—he had glauber ſalts again, to obviate the bad ſymptoms ariſing, and in the evening an antimonial with laudanum.—26th, the yellowneſs of his eyes was nearly gone, and the tenſion of his abdomen, head ache, and feveriſh heats were abated, and he had a fair remiſſion, but he was very much debilitated, with a ſlow pulſe, and yet he would not keep his bed. He was ordered ſnake-root, a drachm and a half, cordial confection, two drachms, and ſimple cinnamon-water, eight ounces, as the bark and wine appeared ſo much to diſagree with him, to take three ſpoonsfull, every three hours; he had a pretty good night's reſt—and on the 27th, he appeared much refreſhed, but towards noon his paroxyſm came on again, with great thirſt, and a full pulſe, and his ſkin was hot and dry, then he had ſaturated vinegar, half an ounce, tartar emetic, half a grain, and ten drops of laudanum, to be taken in the paroxyſm, in order to promote a perſpiration, and lower the fever—— 28th, on this day, he was very low, and his pulſe ſcarce perceptible, his tongue foul, and being rather coſtive he had a purgative, which did not operate at this time; (being unable to ſee him myſelf,) he had alſo half an ounce of bark, to be taken in wine and water, as he was ſo very weak, and had a good remiſſion.—29th, as the purgative did not operate, he was ordered an injection; he had taken about three drachms of the bark, and a little rhubarb, and probably too much wine, as the other ſervants were very officious, giving him whole bottles of it at once, which he kept hid in his hammock, and drank of to exceſs; but at ſeven in the evening, he was taken with a violent paroxyſm, and became delirious, with ſtarting of the tendons—he was ordered a bliſter to his back immediately, and his feet to be bathed in warm water, and he had camphor, five grains, with cordial confection, and five drops of laudanum, in a draught, but he ſoon became convulſed, all over his body, and continued ſo until four in the morning, when he departed.

We were informed that the ill-timed kindneſs of thoſe about him, was a principal cauſe of his death; though they did it with a good intent.

A caſe which proved very tedious through the patient's miſconduct at Bencoolen.

July 10th, 1790—Mr. Preſcot, midſhipman, of a ſanguine habit, aged 18 years, he had lived more freely than ordinary, and ſometimes ſleeping without going to bed all night, and at other times walking, or riding out, expoſed to the burning rays of the ſun. He was firſt taken with ſickneſs of his ſtomach, and pains in his head and back, and in all his bones, and other ſymptoms of fever; whilſt on ſhore, he applied to the ſurgeon of the ſettlement, who firſt gave him an emetic, but no blood was taken, although he required it; after the emetic he had ſaline mixture, and the bark had been ſent to him, but fortunately for him, he had not taken any until he came on board, by which time he had been three or four days bad of the diſeaſe. 10th, when he came on board he was in a high fever, his tongue foul, and of a browniſh colour; he was very thirſty, and with griping pains of his bowels, and every ſecond day he had an exacerbation of the fever, he had half an ounce of rochel ſalts, and afterwards half an ounce of Mindererus's ſpirits, with half a grain of emetic tartar, every two hours, through the day, &c. 11th. the fever was much abated, but he complained of weakneſs and langor, and his tongue was foul and browniſh; he was now ſet to take the bark, a drachm every three hours in wine and water. He had an acceſſion of the fever in the night, and in it he had an antimonial, with a few drops of laudanum. 12th, he continued the bark in the remiſſion. 13th, he was much better and went on with the bark; had another acceſſion of the fever in the night, and had then an antimonial with laudanum. 14th, his fever was milder laſt night than the former acceſſions, he now complained of uneaſineſs at his ſtomach, for which he had a gentle emetic. 16th, the paroxyſm was ſcarce perceptible; he continued the medicines, &c. 17th, he was ſo far recovered, as to be able to get out of bed, and walk about a little, and took ſome of the bark, &c. 19th, he went on recovering gradually, and now left off the bark, as he all along had a great averſion to it, and could not be prevailed upon to take it regularly—he recovered, although but ſlowly. On the 28th, he ſuffered a relapſe from ſitting in the great cabbin, expoſed to a current of air, and eating unripe fruit, and drinking porter. His ſkin became dry, his pulſe weak, he was reſtleſs, captious, and troubleſome, and could ſcarcely be prevailed on to take any medicines—he had an antimonial, with a few drops of laudanum at night. 29th, he was obſerved to have a ſwelling of his feet, which he concealed, his fear of taking medicines was ſo great, and as this indicated obſtructions of the abdominal viſcera, he had three grains of calomel in a pill at night. 30th, he had no fever, but was very weak, and low ſpirited, and had a great averſion to motion, he was ordered a drachm of bark, three times a day, and at night two grains of calomel, in a bolus. 31ſt, It was very difficult to get him to take one or two doſes of bark, at eight in the evening by ſitting up, he became faint, and was carried to bed.—We were informed that he had drank too much bottled porter before this attack; he now became highly delirious, with a burning heat of the ſkin, as the bark had vomited him, he had left it off before this fit came on, and having ſymptoms of obſtructions in the abdominal viſcera and ſwellings, &c. he had pills of calocynth, comp. and tartariſed antimony, half a grain.

Aug. 1ſt. He was free of the fever, and perſpired freely, he lay however, in a comatoſe dozing or ſleepy ſtate, unleſs when rouzed from it; now he had a bliſter to his back to rouſe him from this lethargic ſtate, and as he was coſtive, he had a pill as before, every three hours—2d, he appeared a little livelier ever ſince midnight; he had two or three evacuations in the night, but he was very weak and irritable, he therefore had half an ounce of bark with wine and water; the ſwellings of his feet were almoſt gone. 3d, he reſted well in the night, and appeared to be getting better very faſt; the bliſter diſcharged freely, and the bark remained on his ſtomach better, and his appetite began to return. 4th, he was entirely free from the fever, and a little eruption appeared about his mouth; he was now again, ſo far recovered as to be able to ſit up a little; he reſted well laſt night: as he could not be got to take much bark, he had one drachm of it, with half a drachm of ſnake-root, in wine and water every day at eleven o'clock until the ſixth, recovering ſlowly, when he left it off.—On the 8th, as he had been coſtive for ſome time, and the ſwelling of his feet returning in the evenings, and pitting when preſſed upon; he had one ſcruple of purging pills, and calomel two grains, made in four pills to take at bed time. 10th, he continued to get better, but the ſwellings continued, he had the ſame pills repeated. 13th, he continued recovering, but the ſwelling of the feet continued, and he had the pills as before.—18th, he was taken with a pain of the ſtomach, nauſea, and inclination to vomit; he had three grains of emetic tartar immediately, and the next morning, 19th, a purging draught: after the emetic the ſwelling about his ancles leſſened conſiderably, but he became much weaker—he had another ſeveriſh paroxyſm in the evening: this was his third relapſe, and there were ſufficient reaſon to think, this was likewiſe cauſed by intemperance, and his averſion to the bark. In the night he had a hot and dry ſkin, and a hard quick pulſe, he had ſeven grains of antimonial powder, and twelve drops of laudanum.—20th, the fever was entirely gone, but left him very weak, and the ſwelling of his feet, was totally diſappeared—he had therefore half an ounce of bark ordered for him, in wine and water, but he had the moſt inſuperable averſion to it, and uſed every means, and excuſe in his power to evade it, but he was forced to take about five drachms, (much againſt his will,) by watching him, for he would even conceal it in his mouth, and ſpit it out as ſoon as our backs were turned. 22d, as he begged a reſpite from the bark yeſterday, he had no medicines, but this day he was forced to take a little in wine and water, at eleven o'clock, and from this forward he took no more medicines, and recovered. 27th, by this time he was entirely in good health. We were now one week in China, and he has been ſick, ſince a week before our leaving Bencoolen, in all ſeven weeks.

Remarks.—It is to be obſerved, of this young gentleman, that he was very much of an epicurean, in the modern acceptation of the term, and he was remarkably impatient under his ſickneſs, which always aggravates the danger; and as he had the command of money, and was very fond of every gratification, he would not refuſe himſelf any thing, nor undergo the diſcipline of taking medicines, or of being confined to any regimen; which with his uncautiouſly expoſing himſelf, when weak to the night air, without exerciſing, as walking, &c. at the ſame time aggravated his danger. Between the firſt and ſecond relapſe of the fever, he was in good health, only weak, and his averſion to the bark, deprived him of the advantages, which he might otherwiſe have derived from it, towards the re-eſtabliſhing of his ſtrength; the ſwelling of his feet, and the primary cauſe of it, obſtructions in the abdominal viſcera, were more probably owing to a deficiency of the bark, than to over much of it, as he never took ſo much as was ordered for him. At the time of his third relapſe, his caſe appeared to be very hopeleſs, but his recovery was very perfect, in all reſpects.

The Typhus, or Low Nervous Fever.

THIS Fever is generally firſt perceived by an uneaſineſs, and ſickneſs of the ſtomach, and a head-ache and pain, chiefly over the eye brows, with a vertigo, and pain of the loins, and ſometimes in all the bones, and joints of the body, with a nauſea, and bad taſte in the mouth; and the tongue is at the beginning, covered with a white furr, which, in the progreſs of the diſeaſe, turns browniſh; and the teeth are ſometimes covered with a blackiſh colour, and there is a great thirſt, and bad taſte in the mouth.

The pulſe, in this ſpecies of fever, is commonly quick, and weak, from 110 to 120, or 130 in a minute. In ſome it is hard, and tenſe, with a pain acroſs the bottoms of the orbits of the eyes; there always is a great laſſitude, and weakneſs, and a frequent deſire of changing the poſture of the body, and limbs; the patients feel as if they were over fatigued, tired, and reſtleſs, and cannot ſleep; with ſtarting or frightful dreams, which they are often troubled with; the ſenſes of perception are diſturbed, and the memory is confuſed, and the judgment weak, wavering, and childiſh; they are often ſo forgetful, that they cannot remember any thing they are doing, or ſaying; and if they aſk for any thing, they either forget it, or think it very long in coming: and in ſhort all the ſenſes, and faculties are very much perverted, and diſturbed; they often become delirious, but principally in the night, through want of reſt, or objects to fix their attention—ſuch as ſpeaking to any one, or looking at any object; they often talk to themſelves incoherently, often miſtaking imaginations for realities; and yet if any one ſpeaks to them, they commonly return a proper anſwer, or even converſe ſenſibly, for a little, and preſently fall into their unconnected reveries, toſſing about in bed, ſighing, and ſeeming to be in great diſtreſs; ſometimes paſſing ſeveral days and nights, without aſking for any thing, either to eat or drink, or even wiſhing to have any thing that is offered to them, in a liſtleſs ſtate of apathy, want of reſolution and wavering of their minds.

This appears to be in every ſenſe of the word, a continued fever: for it is very rare to ſee any ſuch thing as exacerbations, or remiſſions in it for ſeveral days, or even for weeks together—its continuance being ſometimes very long, and obſtinate, weakening the patients exceſſively, both in mind, and body, if ſuffered to go on without medical aſſiſtance, but which, generally by proper treatment, may be either cut ſhort, or at leaſt cauſed to be leſs hurtful, than when left to itſelf, in the manner of the Antients; as we find by their writings, they moſtly did in their practice.

The cure ſhould in general, be begun, by giving an emetic, as ſoon as the firſt ſymptoms of uneaſineſs are perceived at the ſtomach; this in ſome caſes prevents the farther progreſs of the diſeaſe, and cuts it ſhort at once, and ſhould never be neglected by thoſe who are expoſed to the infection, by being near the ſick, upon the firſt ſuſpicion of their being infected: which may be known by a ſickneſs at the ſtomach, head-ache, and a peculiar ſenſation of and dryneſs of the tongue, accompanied with a prickling ſenſation in the mouth, and an uncommon ſort of taſte, &c. and ſometimes a pain of the loins, or of all the bones. But as ſome perſons are very averſe to vomiting, five grains of antimonial fever powder, ſhould be taken, in order to clear the bowels, keeping warm in bed, and taking warm drink, to promote a perſpiration, and remove the torpor of the ſmall veſſels—this may ſometimes ſupply the place of an emetic ; but if they have taken an emetic, they ſhould endeavour to promote a perſpiration, by getting into bed immediately after its operation, with warm drinks—and if it does not break out eaſily, a little of the antimonial powder, in a ſpoonful or two of vinegar neutralized with ſpirit or ſalt of hartſhorn promotes it.

If there ſhould be any appearance, of an inflammatory diatheſis, accompanying this fever, blood may be taken to advantage, in the early ſtages of the diſeaſe, although this is but ſometimes the caſe. Therefore it ſhould be uſed with caution, and not indiſcriminately, and by rote, in every perſon taken with this diſeaſe ; but let the pulſe, and the appearances of the patient, direct the experienced practitioner in that reſpect ; and if they can diſtinguiſh an inflammatory pulſe, from others, they will ſeldom err here. As in all continued fevers, ſo in this, it is abſolutely neceſſary to keep the bowels clean, by purgatives—if there are any inflammatory appearances, theſe ſhould be of the lenient and ſedative kind, as the neutral ſalts, Sal. Rochel, or caſtor oil. But where the diſeaſe is of the low nervous appearance, the moſt draſtic, or reſinous purgatives may anſwer better, by ſtimulating the low, and languid powers into action ; of this ſort, jalap, rhubarb and, aloetics with calomel, may be uſed occaſionally ; but ſometimes the antimonial powder, ſupercedes the uſe of purgatives, by operating in that way—this powder ſhould be given at intervals of ſix, eight, or twelve hours, but particularly at bed time, in caſe the patient is not cloſe confined, as is often the caſe, at the beginning of this fever. But if they are confined, and the powder will not promote a perſpiration, the neutralized vinegar may be given with it, or the common ſaline draught. Theſe are peculiarly proper, in caſe of great irritability of the ſtomach, without any perſpiration ; and even a few drops of laudanum, may be added to the night draught, when there is want of ſleep; but this ſhould not be made free with at firſt, as it is apt to produce coſtiveneſs, and leave the patient low after the uſe of it; and in caſe the laudanum does not procure ſleep, or reſt, it is very probable that camphor will ſucceed, if given in doſes, of from ten to twenty grains. This in caſes of great irritability, is a moſt powerful ſedative, but particularly in that ſort of irritability, which is of the low, nervous, or ſpaſmodiac ſpecies, in which it anſwers beſt; and theſe diſtinctions, although very obſcure, and difficult to the ignorant, are not ſo to the experienced and well informed, who have uſed themſelves to theſe diſcriminations, by an accurate obſervation of the progreſs of diſeaſes.

In this genus of fevers, the brain is very apt to be affected, and the patients in the progreſs of the diſeaſe, very frequently become comatous, lethargic, and delirious. In caſes of this nature, bliſters between the ſhoulders, anſwer extremely well, in alleviating the ſymptoms, and by their ſtimulus, removing the atony, and giving energy to the parts. There are ſome caſes however, eſpecially at the beginning of this diſeaſe, where there is an inflammatory diatheſis—and here, bliſters would be very improper; but bleeding, and antiphlogiſtic purgatives, ſuch as the neutral ſalts, will be required, with the antimonials, and diaphoretic draughts—as ammonia acetata, (the ſaturated vinegar) or ſaline draughts, anſwer very well in moderating the diſeaſe. As ſoon as the violence of the fever is overcome, and no inflammatory diatheſis is preſent, the Peruvian bark may be given, either with, or without wine; but we do not mean that they ſhould be given in ſuch quantities, as has been ſometimes, injudiciouſly adviſed by phyſicians. We believe only ſmall doſes of bark, and port, or madeira wine, can be given with propriety in this diſeaſe; although ſome have given bark by ounces, and wine by bottles, &c.

After the inflammatory diatheſis of this fever is over, or if no ſuch diſpoſition appears; for even in the moſt infectious degree of the typhus, the young, ſtrong, and plethoric, are as ſubject to be taken with an infectious fever, as others, and an inflammatory diſpoſition often appears, in the firſt days of the diſeaſe, conſequently it may require bleeding, and lenient purgatives, and antimonials; but after this ſtage is over, nouriſhing cordials, and food, are neceſſary; or in caſe it has not appeared in the firſt days of the diſeaſe, then bark, wine, and opium, may be much ſooner uſed with ſucceſs—a doſe of laudanum may be given at night, and the bark and wine may be given, either mixed with water, or ſeparately, but in moderate quantities. We believe from two drachms, to half an ounce of the bark, and from a quarter, to an half pint of wine, will generally be ſufficient in the twenty-four hours; and in caſe great weakneſs ſupervenes, nouriſhing food, and drinks may be adminiſtered, as ſoups and panada with wine and cordials. But the uſe of theſe is to be entered into with caution, obſerving at firſt attentively their effects upon the patient; and in caſe the pulſe grows fuller, and ſlower, and more ſteady upon the uſe of them, and they do not diſorder the intellects, but the eyes become more lively, and the mind more ſerene, they are to be perſiſted in: but on the contrary, if they diſorder the imagination, or quicken the pulſe, or cauſe it to be more irregular, or unſteady, they are to be uſed with caution, or left off altogether, for fear of promoting internal ſuppurations, as ſometimes happen in the brain, and other viſcera, and then the antimonial powder, and neutralized vinegar, may be given to advantage.

Towards the decline of this, or any other fever, pure air, and gentle exerciſe, if practicable; and in tedious low caſes, the cold bath may be very uſeful, as it excites that cheerful, healthy glow over the whole body, immediately by its operation, which is apparently of great ſervice, in recovering the healthy actions of the ſyſtem, or in leſſening the morbid actions, whether that is increaſed irritability or ſome other better defined action, of the living ſolids; but irritability of ſome one name, or other, appears to be a prominent feature in all febrile indiſpoſitions, and the cauſe which excites it, and muſt be found out, if we would cure ſucceſsfully.

A Practical Narrative of the Peſtilential Fever.

THE ſummer of 1793 was remarkably warm, ſo that the inhabitants ſay, they have had few more ſo, in the memory of the oldeſt perſon living ; and the wind was moſtly from the ſouthward. In June there were ſome thunder ſhowers; but July and Auguſt were dry, with very little wind, and generally warm for the ſeaſon. This is as near as we can remember ; but we have ſeveral times ſeen the thermometer above 90°. The greateſt heats are between 12 and 3 in the afternoon—at any other time of the twenty-four hours, the heat, to one uſed to tropical latitudes, is but trifling, if not expoſed to direct rays of the ſun, and then it is warm enough in the middle of winter. The coldneſs of the water is a great luxury, to thoſe who are uſed to the warm water of hot climates, at leaſt to myſelf it is very much ſo. The coldneſs of the evenings and mornings, and the nights in general, are very pleaſing after the heats of the days ; and this is very perceptible as ſoon as the ſun is down—the pleaſant night air invites the inhabitants to ſit at their doors, in the cool of the evenings, and often until late at night, on benches, for they have no piazzas, but are moſtly expoſed to the dews. This cuſtom is more frequent here, than in any other place we have ſeen, in hot weather, and we believe muſt be very often prejudicial to their healths ; for the veſſels on the ſurface of the body being relaxed, by the preceding warmth of the days, and the fluids thereby invited outward, accompanied with a profuſe perſpiration, the inward veſſels are in part emptied of their contents, and the body is weakened, and becomes more ſuſceptible of every impreſſion ; but when the body is expoſed to colder air, a ſtricture appears to be produced on the ſkin, and extreme veſſels, near the ſurface ; and the fluids are propelled to the larger internal veſſels, and viſcera. If this change is brought about gradually, no bad conſequences enſue, by giving the veſſels time to accommodate themſelves to the change ; but when made ſuddenly, eſpecially after being heated by exerciſe, it may often cauſe violent diſeaſes, of the dyſenteric, or feveriſh ſpecies, according as the ſeaſon, weather, or habit of body may be more prediſpoſed to one, or the other : thus we moſt commonly find diſeaſes inflammatory in the ſpring, and accompanied with redundancies of the bile, and lax fibres in autumn.

When perſons expoſe themſelves to the cool evenings, they ſhould uſe ſome exerciſe at the ſame time, to prevent the bad conſequences which ſometimes follow ; walking, or any other active amuſement, which circumſtances may permit. Walking we remarked, was leſs practiſed here, than any other places we have ſeen, unleſs by the few French, who are here, who were almoſt the only people, to be ſeen on the public walks, which was without doubt, much in their favour—no leſs ſo, than their modes of living ; for pure air, exerciſe, and temperance, have at all times the happieſt effects upon health.

In July, an epidemic catarrh, was general all over the city. It appeared to partake of the infectious properties of the influenza ; but it was very ſlight—almoſt every one who had it, going about their ordinary employments, and very little the worſe. It was accompanied by a ſtuffing of the head, and a diſcharge from the noſe, and the lungs, and all the appearances of an inflammation, of the mucous membrane of the noſe and wind-pipe, extending down its ramifications ; and it induced a weakneſs all over the body, which remained a long time ; the head likewiſe felt uneaſy. The diſeaſe however was ſo ſlight, that very few applied for medical aſſiſtance. As there had been rain ſeveral times before this, and heavy thunder ſhowers, it was not much inflammatory, and did very well by evacuating the contents of the ſtomach and inteſtines, and giving a little bark and wine or cordials, to reſtore the tone of the ſyſtem in general. This complaint was moſt prevalent in July ; and except the diſeaſes among the children, ſuch as diarrhea, or dyſenteries, which are common every year, there were no remarkable epidemics before Auguſt. So far as we can recollect, the ſtate of the air and diſeaſes, for upwards of three months, before the raging epidemic took place.

It is proper to be obſerved, that the inhabitants of this city, are in general of more robuſt, and plethoric conſtitutions, than is common in cities, or in any other places farther ſouthward. Their appearances are ſuch as have been underſtood by bilious; and as we have ſhewn the connexion there is, between the colour of the inhabitants of any local ſituation, and the healthineſs, or unhealthineſs of the place, to judge from colour, we would not readily take this to be an healthy ſituation; and ſo far as we have ſeen of different parts, this rule holds good generally with the inhabitants of temperate climates. They loſe their white, and florid colours, in proportion, the unhealthier the place is in which they live; ſo that one much uſed to ſee this variety, may determine at once concerning the healthineſs of any place, by the appearance of the inhabitants. This colour is always in proportion to the deficiency of pure air, and the predominance of inflammable or fixed air in the atmoſphere; for when ſo impregnated, it cannot abſorb ſo much inflammable air from the blood in the lungs, nor impart ſo much heat, and the vital principle to the blood; conſequently, the ſuperabundant quantity of inflammable air, is in ſuch circumſtances, retained in the body, and being an excrementitious ſubſtance, muſt be at leaſt a prediſponent cauſe of diſeaſes; but we do not aſſert it to be an exciting, or active cauſe.

The low land on the neck, is of a large extent, and certainly a very unhealthy place; between the city and Kenſington, is a low place of ſtagnant water, and dams; beyond Kenſington is banked land of a large extent. The Jerſey ſide is low, and we doubt rather unfavourable to health; and about the Schuylkill, are muddy and ſwampy ſhores in ſome places. But the greateſt inconvenience, we believe, which this city labours under, is the form in which the houſes are crouded together, upon the banks of the Delaware—the ſtreets being all diſagreeably narrow, Market-ſtreet alone excepted, and it is near half filled with the market-houſe, or ſhambles. The number of lanes and alleys; the ſmall pinched up houſes, as though there was not room in the country to extend them back towards the Schuylkill; this is the greateſt fault which appears in the ſtructure of the town. We cannot accuſe it of dirtineſs, in general, but the very reverſe. And although we would wiſh burying places to be out of town, as an improvement in decency; we never knew, nor heard of a well atteſted fact of their ill effects.

The firſt ſymptoms of the diſeaſe, was a ſenſe of uneaſineſs, and ſickneſs of the ſtomach, which was ſoon followed by rigors, and a ſtricture all over the extreme veſſels, with a ſhrivelled appearance of the ſkin.——Then came on pains of the head, in many accompanied with pains of the loins; ſome had pains in all their limbs; others had them only in their upper arms, ſhoulders, or thighs—in many, the firſt attack appeared like a paroxyſm, of an intermittent, with a chillineſs, and ſhivering, ſucceeded after ſome hours, by great fluſhes of heat, and a burning ſenſation of the ſtomach: or a chillineſs of ſeveral hours continuance, was very frequently the firſt ſymptom of the diſeaſe, with commonly an inclination to vomit; and frequently a conſtant vomiting, from the very firſt, which in many caſes was a very troubleſome ſymptom, and in ſome caſes, baffled all the endeavours of art to allay it. In many of the moſt violent caſes, they had a violent pain croſs the bottoms of the orbits of the eyes, or above them, in the bone, as it ſeemed; the eyes at the ſame time, were red, heavy, and dull, and rather ſtiff in their ſockets. In theſe caſes, in which the eyes appeared inflamed, and pained, and a great heat at the ſtomach; the pulſe was commonly quick, and hard, in common from 120 to 130 in a minute—the reſpiration was at the ſame time laborious and difficult. Some had evident ſhooting, or darting pains in the breaſt; very much like a pleuriſy, and would perſuade themſelves, and their attendants, that this was their diſeaſe; but this ſymptom we never ſaw, until the weather became cooler—but the affection of the ſtomach ſeemed to be the moſt univerſal, and conſtant ſymptom of this diſcaſe, denoting an inflammation of its coats, attended with vomiting in moſt caſes. And in ſome, with a burning heat, and pain, from preſſure on the pit of the ſtomach, which in many remained long after the diſeaſe, even a month or ſix weeks after they were otherwiſe in health; This primary, and great affection of the ſtomach, which was never abſent in this diſeaſe, would appear to be a ſtrong proof, that the infection, was primarily received there, eſpecially as it is known ſo ſoon to affect the ſkin, and the head, whenever it is diſordered.

Dr. Huxham, thought infection was of the nature of volatile alcali—becauſe the ſailors, who were diſpoſed to the alcaleſcent ſcurvy, were moſt apt to take the fever, which he denominates malignant, or peſtilential; and which he ſays, was firſt brought to Plymouth, by two ſhips of war, from the Mediterranean; which there was good reaſon to prove, was as a modification of the plague; becauſe the ſaid ſhips had communication with places infected by the plague, which was raging there at that time. Now hydrogene, as well as vol. alcali, is generated by the animal proceſs from our food, either of the animal or vegetable kingdoms. But in larger proportion from the former, than the latter. And graminivorous animals generate an alcali, from all ſorts of vegetables they uſe. And when we conſider that vol. alcali is compoſed of azotic (dephlogiſticated) air, and hydrogene (inflammable air;) there would appear to be ſome probability of reaſon in the idea.

Dr. Balfour ſuppoſes the remittents and fluxes of India, are infectious; and that the infection is firſt received into the ſtomach and inteſtines; for which reaſon he calls them putrid inteſtinal remittents. Becauſe he ſays, from what he obſerved of the ſick, the mucous of the inteſtines, was in a putrid ſtate, the abſorption of which, from the inteſtines infected the fluids, and the whole ſyſtem.

If we were to adopt theſe theories, both of which we think, have ſome reaſon in their ſupport; we would find, however, that the deleterious ſubſtance of infection, however received, firſt began its operation in the ſtomach, which it inflamed, and did not appear to carry its effects much farther than the ſtomach, but was communicated to the biliary ducts and liver, preventing the free paſſage of the bile into the inteſtines, and cauſing a regurgitation of it, and a jaundiced appearance: firſt in the whites of the eyes, and afterwards in the ſkin—in ſome, this came on the third, or fourth day, and was in general a mortal ſymptom, when it appeared before the ſeventh. In the moſt favourable caſes, it made its appearance between the ſeventh, and the tenth day of the diſeaſe. We do not think the bile being regurgitated into the ſyſtem, deſtroyed the patients; but the early appearance of it, ſhewed a great degree of inflammation in the parts, obſtructing its proper exit, by the inteſtines, which deficiency of bile in the inteſtines, was probably a cauſe of the coſtiveneſs; which was very general in this diſeaſe, ſcarce any of them had natural evacuations, and required large, and often repeated doſes of purgatives, to produce the deſired effect. Whether the infection of fevers is received by the lungs, with the air, which is not probable, becauſe the lungs do not appear to bear any ſhare of the fever, or to be primarily diſeaſed, and indeed they ſeldom ſuffer; or to fall upon the pharynx, in inſpiration, and from thence to be conveyed into the ſtomach, with the ſaliva, and there act on the ſtomach; and decompoſe the gaſtric fluid, and mucous lining of the ſtomach, which defends its villous coat from being injured by its contents, it would appear to be of an alcaleſcent nature. But we would not aſſert that either of theſe properties are any cauſe of the diſeaſe, or in bad caſes whether they are both combined, has not yet been fully demonſtrated; neither do we conſider it of any material conſequence, either in the prevention or cure. Although it is probable in thoſe days of inveſtigation, of the principles which compoſe the atmoſphere; they may be illuſtrated experimentally, before any diſtant period. The eſtabliſhed uſe of vinegar, and wine as preventatives, ſeems to favour the opinion of its alcaline nature; and as there is no probability of its being abſorbed by the ſkin; therefore it would, like other things inimical to the habit, cauſe inflammation in the glands of the abſorbents, which never happens in the beginning of any ſever; except in the plague; and we believe they do not come on in the beginning of it either, but after ſome times continuance; when we may ſuppoſe the abſorption has been cauſed, by the diſeaſed fluids, extravaſſated, or perſpired by the veſſels on the ſurface of the body.

In ſome the ſymptoms of inflammation run very high in the beginning, with a violent head-ache, quick, full, and hard pulſe, pains in the loins, great heat and uneaſineſs of the ſtomach, redneſs, and pain of the eyes, with a ſtiffneſs in their ſockets; accompanied in ſome with a vomiting—but in all, with a ſenſe of heavineſs, and oppreſſion at the pit of the ſtomach, and an inclination to vomit. In others, it came on in a very inſidious manner: the ſtomach would be perhaps a little uneaſy, with a ſlight pain of the part; the pulſe rather depreſſed, and perhaps not more than 100, and very little changed, or leſs ſtrong than in health; many of theſe patients were not cloſe confined to bed, but would be up and down by turns, and would ſcarce believe they had the fever, until after the fifth, or ſeventh day, when it began to be more alarming, by a delirium coming on in the night; great weakneſs and depreſſion of ſtrength, and paroxyſms returning irregularly, or every ſecond day, with a yellowneſs of the eyes; and ſoon after, all over the body; although many died of the diſeaſe, on whom there were no yellow appearance, either before, or after death. And here we think proper to mention, that a yellow fever was a very improper name for it, as it was only an accidental ſymptom, or appearance of a jaundice, ſuperadded to the reigning epidemic, by the obſtruction of the natural courſe of the bile. It was denominated malignant by many; neither do we think that epithet was any better to give it. For in medical language, the characters of malignancy, are of a very different nature, and ſeem rather to owe their origin to weakneſs, and an increaſed degree of morbid irritability, and do not bear phlebotomy; and appear to approach rather to the eryſipelatous, than phlegmonous inflammation. Therefore, from a due conſideration of it, we would rather denominate it a peſtilential remittent, than by any other modern name; and if we go to the ancients, Celſus is an authority for this appellation.

That it belonged to the diviſion of remittents, was very evident, for it never continued more than the firſt three or four days, without a remiſſion; and then the firſt paroxyſms run into the ſecond, and ſo on at uncertain intervals. But we believe every one, unleſs they died within three days, had ſenſible remiſſions—in ſome they had the appearance of the tertian type; but in others they were of no certain intervals, and the remiſſions were ſcarcely diſcernible. And theſe laſt, where the fever continued violent after the third day, with uncertain, or ſcarce any perceptible remiſſions, were in common the moſt dangerous. Whilſt the firſt high degree of fever laſted, though there was great weakneſs, yet their ſtrength and ſpirits were not near ſo far gone, as they were in the remiſſions, eſpecially if they were well marked; for then, when the fever was abſent in any degree, they were weaker, more diſpirited, and caſt down, by far, than whilſt the fever was high, and the circulation ſtrong and rapid. And this depreſſion, was commonly accompanied with a great anxiety about many affairs, and fear of death. It was beſt in this ſituation, to encourage them with hopes of recovery, and good news, and keep all bad accounts of the raging of the diſeaſe, and the deaths of their acquaintance concealed from them, until all danger of the diſeaſe was over, on their part; for any alarm was ſure to increaſe the violence of the diſeaſe, in the next paroxyſm, or even to induce a violent paroxyſm, when they ſeemed to be out of danger. This happened to ſeveral of my patients, by being inconſiderately told of the death of ſome friend, or acquaintance, when in a weak ſtate; or from being vexed by ſome occurrence which diſpleaſed them. For in ſome this brought on relapſes—expoſure to cold, or exceſſes of any kind, did the ſame in many when the diſeaſe was gone, but before they had recovered their ſtrength.

The before mentioned, were ſome of the moſt conſtant, and invariable ſymptoms of this diſeaſe; but diſeaſes are as different as human faces; even thoſe of the ſame ſpecies. Yet to an accurate obſerver, they all differ, in ſome particulars, from one another, according to age, ſex, conſtitution, and habit of body, and in proportion as they were more or leſs prediſpoſed to the diſeaſe, at the time of receiving the infection. At the firſt appearance of the diſeaſe in Auguſt, and September, while the warm weather laſted; the robuſt, middle aged and plethoric had the worſt chance; when at the ſame time the aged, or young children, and delicate women, generally were ſafeſt. But as the weather began to grow cool, and the diſeaſe milder, with the ſtrong and robuſt, and middle aged, it was worſe upon the weakly and delicate children, and the aged—and in many very tedious and obſtinate; ſcarce any two were exactly alike, in all their ſymptoms, and appearances in this diſeaſe, thoſe of inflammatory habits ſuffered the moſt, and had the worſt chance, when the diſeaſe was moſt mortal, before the cool weather ſet in, about the middle of October; for after that, it aſſumed a much milder form, and was by far more tractable. We write from obſervation, and experience, neither favouring nor oppoſing any theory, or general rule, farther than the cauſe of truth and ſcience are concerned; and we hope as free from prejudice as moſt people, and ever have made this a rule, both in the deſcriptive, and curative part; for the ſymptoms, and not the names of diſeaſes, are what we have always in the practice of medicine, paid the moſt particular attention to; and here we cannot but lament the great neglect of the ſymptoms.

We remarked all through this diſeaſe, that it was much milder in the ſuburbs than in the middle of the city—eſpecially to the ſouthward and weſtward it was leſs fatal; and in cloſe alleys, and ill aired ſtreets, it was much more dangerous, and alſo more general, than where there was a more open expoſure, and free air; and the broadeſt ſtreets were the ſafeſt from infection—and when it did happen to be carried to them, from leſs favourable ſituations, although the perſons taking it to thoſe places, might be very bad, it was not ſo apt to ſpread, as in the more crouded parts of the city. This being the caſe, it is much in favour of wide ſtreets in building, and not looking ſo intently towards gain, and crowding ſo cloſe together; for to the weſtward there is room enough: and if houſes were built more airy, and every one had a garden, where they might enjoy the refreſhing exhalations from vegetables, and the pure air which they admit of, it would be both pleaſant and healthy in the ſummer, in compariſon of the noxious effluvia from impure air, heated by the reflection from buildings, animal effluvia, and vitiated exhalations, from innumerable ſources of putrefaction. This was clearly demonſtrated; for even the people from town did not contract the diſeaſe in the country, although many of them were there about their ſick and dying friends, and their conſtitutions the ſame as they had been in town, being only a day or two out when they were expoſed to the danger: and it was likewiſe ſeen that country conſtitutions in town, were as liable to contract the diſeaſe, as the citizens—many of whom caught the infection in town and died; and therefore there is ſufficient reaſon for ſuppoſing, that a deficiency of pure air, was one of the greateſt prediſponents to the diſeaſe, and at the ſame time the infection being more concentrated, and ſtronger, on account of the great number ſeized with it; but at the firſt breaking out of the diſeaſe, this could not have been the caſe, before we could expect the air to be ſo much impregnated with the noxious effluvia; and therefore a deficiency of pure air, muſt have been a principal cauſe of its ſpreading at firſt in town, and the impregnation of putreſcent effluvia, otherwiſe it would have been as infectious in the country, where the ſick and dead were, as in town, had not a deficiency of pure air, and noxious effluvia been a prediſponent cauſe, when the firſt few were taken. For it appeared that it was an infection which required to be well concentrated, to become active, or the air to be ſtrongly impregnated with it, or long applied; but pure country air counteracts it entirely. In this reſpect it differed from moſt other ſpecies of infection; for the typhus fever, ſmall-pox, meaſles, &c. are infectious every place equally.

We are convinced that the diſeaſes which ſooneſt deſtroy, are the ſooneſt cured, when properly treated. We do not mean that they are moſt certainly cured, or the leaſt deſtructive; but if they are not mortal, the conſtitution ſooneſt recovers its due ſtrength after them: as it is not ſo much exhauſted by acute, as by chronic diſeaſes, and conſequently it will require leſs time to recruit what it has loſt by a ſudden, than by a tedious ſickneſs.

In the firſt appearance of this diſeaſe, whilſt the hot weather continued, it was either death, or a perfect recovery in a few days; but afterwards, when the weather became colder, it was often very tedious, though not commonly ſo dangerous in the firſt ſtage; therefore while the weather remained warm, the great effort between life and death was to be made at once, for many died the third or fourth day: and in caſes of this nature, there was no temporizing, to ſee what turn the diſeaſe would take; for ſomething was to be done immediately—and here accurate attention and experience in the phyſician, and attendants never was more neceſſary; and very often all the aſſiſtance which could be given was vain, and every rule of art fruitleſs, even the moſt approved—and with the number of calls, and endleſs ſcenes of diſtreſs and danger, the minds of the phyſicians were almoſt diſtracted, every method failing in many inſtances; for then we had none who did actually cure 99 in 100—vain boaſt!!! Even with all the future improvements which were introduced, although we are convinced they were of conſiderable importance; and my ſucceſs was at leaſt equal to that of any other in the city; but few who remained in town, were free from diſtreſs, by one means or other. Here a particular narrative, &c. might be introduced, and the means by which I loſt ſome uſeful lives, by their own diſtruſt in my mode of cure.

Whenever called, my firſt care was to find out whether it was really the raging epidemic, which was the cauſe of the indiſpoſition, which at leaſt 99 times in 100 was the caſe; then by a cloſe examination of the ſymptoms, and the patient's habit of body, to find what was firſt to be done. Where the ſymptoms of inflammation ran high, as they did in one half of my patients, after examining the habit of body, and preſent ſymptoms, if they could bear phlebotomy, it was performed immediately, and repeated it, as the urgency of the ſymptoms required, in 8, 12, or 24 hours, from once to 4 or 5 times. In this, the hardneſs and ſtrength of the pulſe, the appearance of the countenance, pain and ſtiffneſs of the eyes, and acroſs the bottoms of their orbits, the eye-brows, or the optic nerves, and the heat, and other ſigns of inflammation in the ſtomach, are the indications for bleeding. This part of the cure we would wiſh to pay the more attention to, becauſe of being the firſt who uſed it in oppoſition to the mode generally followed at firſt in this diſeaſe; but never uſed general phlebotomy, nor ever found it neceſſary. The human conſtitution is not a mere machine, in which every perſon, in the ſame diſeaſe, may be treated in the ſame manner, or by the ſame medicines; but muſt be varied according to circumſtances.

We ſhould have mentioned vomiting, as the firſt thing to be done, if it was ever admiſſible—which after the fever was formed it never was; for then the ſick were too apt to be troubled with a ſpontaneous vomiting, without encouraging it. It was one of the moſt troubleſome ſymptoms, and moſt difficult to put a ſtop to; but at the very firſt ſuſpicion of having received the infection, or the firſt ſenſation of ſickneſs, or uneaſineſs of the ſtomach, before head-ache or inflammation began to ſhew themſelves, a vomit in theſe circumſtances might be admiſſible. I took one myſelf, and when called in time, gave ſome to others; and many took them in order to carry off the infection and fever at the ſame time—which however they ſeldom accompliſhed. Many people had commonly proceeded thus far, before they called in a phyſician; for they were not apt to ſend, until the fever was formed, and then the time for giving emetics was over; unleſs it happened when attending ſome other patients, in the ſame houſe with thoſe newly taken, and being told of it in the uſual courſe of viſiting—in which caſe we have ſeveral times ordered emetics; but we cannot ſay that they were attended with any remarkable ſucceſs, either in alleviating the preſent, or preventing the future diſtreſs. The weight and uneaſineſs they generally felt in their ſtomachs, induced many to take emetics of themſelves, even after the fever was formed; but this was always prejudicial. They were, in all caſes of this kind, attended with bad conſequences; and in many inſtances the vomiting could not be ſtopped by any means, though innumerable remedies were tried: for after the contents of the ſtomach were diſcharged, whether the vomiting was brought on by nature, or art, a retching continued, bringing up the gaſtric juice, and mucous defence of the interior coat of the ſtomach, and whatever drink the patients had juſt taken. This retching was almoſt conſtant in ſome, and in others returned periodically; and in very bad caſes, after the ſecond, third, or fourth day, there was a ſediment very much like the grounds of coffee, to be ſeen in the matter brought up; and in ſome it was of a livid, or a dark green colour. Very few, if any, lived, who diſcharged this brown or black matter—they commonly died in a day or two after it began. In others, though a vomiting tormented them, it never aſſumed this, even in ſome mortal caſes, although no leſs obſtinate and troubleſome. The reader may, by this, perceive that there was great attention, and experience, required to allay this troubleſome ſymptom; of courſe the ſaline draughts, would be the firſt remedies that would occur to the mind; but although we tried them fairly with cinnamon water, &c. they were uſeleſs, as far as we know; neither were the mineral acids more ſucceſsful, either diluted or dulcified: indeed every thing of this nature, ſeemed rather to increaſe, than to mitigate this ſymptom. Recourſe was then had to fomentations to the pit of the ſtomach, with much better effect, either by applying bitter herbs of different kinds, or clothes wrung out of a decoction of them with warm brandy, and with good ſucceſs in ſeveral caſes of mine; and in obſtinate caſes, bliſters were generally uſed upon the region of the ſtomach, ſometimes with ſucceſs. In ſome caſes when accompanied with a burning heat, and an inflammatory diatheſis, bleeding immediately carried off theſe ſymptoms of pain and vomiting altogether. The moſt ſucceſsful inward applications, were ſoft, mucillagenous and cordial drinks, taken in very ſmall quantities, and often repeated; for the ſtomachs of thoſe in this ſtate, could not bear a wine-glaſs full even of the mildeſt fluid, at a time—in many caſes not a table ſpoonful; but the beſt way was to begin with very ſmall quantities, repeated very often, increaſing the quantity, if they could bear it, to take off that uneaſy ſenſation; for this purpoſe, we ſometimes uſed new milk, where it could be procured, or water gruel, with cinnamon or nutmeg, molaſſes and water, and oil of almonds incorporated, mucillage of gum arabic, or linſeed tea, and innumerable other like forms; for almoſt every nurſe had a favourite ſpecific of her own, which were often applied indiſcriminately, to all her acquaintance.

The burning heat in the ſtomach was another ſymptom, which was ſometimes preſent, independent of vomiting, and very diſtreſſing. We never knew any thing ſo often beneficial in it, as molaſſes and oil of almonds incorporated, and ſwallowed in ſpoonsful frequently. Molaſſes by itſelf, ſometimes in thoſe who could not bear the oil with it, or water gruel to thoſe who liked it, or barley water, were all by turns uſeful, as they happened to agree with the patient.

If the vomiting had not come on, or was reſtrained after appearing, we always wiſhed to clear the inteſtines, by evacuations downwards: if there was a vomiting, as was often the caſe from the beginning, then we ordered injections to be given, and frequently repeated, in order to empty the bowels, and likewiſe soothe, and allay the perturbation in the firſt paſſages. Theſe were often extremely uſeful through the whole courſe of the diſeaſe, once a day at leaſt; they were compoſed of molaſſes and water, with a ſpoonful or two of oil or vinegar, milk and water, and ſometimes a little of the neutral ſalts were added, if the coſtiveneſs was obſtinate: manna, coarſe ſugar, &c. were all uſeful in their turns. But if the ſtomach was in a condition to bear purgatives, we never neglected giving the mildeſt of the neutral ſalts, with manna, or molaſſes, cream of tartar, &c. in ſmall quantities at a time, for fear of that dreadful ſymptom, vomiting. We found none anſwer better than the rochel ſalts, diſſolved with manna or molaſſes, and a little of it taken every hour or two, until it produced the deſired effect. In this practice we had the teſtimony of ſome practitioners of eminence before us, and can recommend it from experience. Huxham, whoſe writings are as good as any of modern date, followed this practice in malignant, peſtilential fevers, and wiſhed to prevent the ſemiputrid contents of the inteſtines from being abſorbed, as the fluids already had an alcaleſcent tendency; and of courſe, whatever might be abſorbed, would increaſe that tendency before the inteſtines were evacuated. This was the more neceſſary, becauſe the ſick were habitually coſtive in this diſeaſe, unleſs in the advanced periods of it; in ſome caſes, a ſpontaneous diarrhea came on; it was ſeldom however a good ſymptom.

For thoſe whoſe ſtomachs could bear common ſalts, they anſwered very well. But it was neceſſary to make them palatable, by adding a little vinegar, or lemon juice, molaſſes, or ſugar; and in this form, they often anſwered equally well, with any of the other neutral ſalts, eſpecially if given in ſmoll doſes, and repeated occaſionally. In many caſes caſtor oil was better than any other purgative, This we commonly preferred, where there was much pain, or any great irritation in the lower part of the bowels, which were generally accompanied with flatulent ſwellings, &c. or coſtiveneſs which were very frequent. Here likewiſe, injections were particularly uſeful, and when the coſtiveneſs continued obſtinate, with a tumid abdomen, after the inflammatory ſtage of the diſeaſe was paſt—purging pills ten grains, calomel two or three grains, or rhubarb and jalap, from five to ten grains of each, with two or three of calomel, anſwered better than any other. But we never ventured any thing ſo ſtimulant as either of theſe, when there were any inflammatory ſymptoms preſent, until they had totally diſappeared; and then, or in thoſe in whom there were little or no inflammatory diatheſis at firſt—after clearing the firſt paſſages by the neutral ſalts or oil, as before related, theſe ſtimulants often anſwered well, after the third day, obviating obſtructions in the abdominal viſcera, or removing them where preſent—we generally found it neceſſary to give one or other of theſe, at leaſt every ſecond day, whilſt the violence of the diſeaſe continued; and as ſoon as they were neglected, the patients grew coſtive, and the diſeaſe increaſed; but there were much prudence neceſſary in their uſe, to adopt them properly to the caſe, from the direction of a rational medical, and practical induction, as they were by no means to be uſed indiſcriminately, in all caſes. But the ſtimulants, in the low caſes, or ſtages of the diſeaſe, as reaſon would indicate *a priori;* and the cooling neutrals in the violent and inflammatory ſtages, or caſes.—Theſe were the reſult of the obſervations which we collected from a great number of patients, and a diligent and very cloſe attention to them, and the ſymptoms, by the moſt attentive obſervation of the effects of the medicines. But many, after the diſeaſe was gone, were ſubject to relapſe; or at leaſt to get very much diſordered, whenever they became coſtive, and would immediately get well, by the operation of a purgative. This ſtate commonly remained for a month, or ſix weeks after the diſeaſe, which in my opinion, is a very ſtrong proof of the indiſpenſable utility of purgatives—although we only depended upon them for clearing the inteſtines, not for a cure, though a neceſſary part of it.

On the firſt appearance of the diſeaſe, in Auguſt we uſed the antiphlogiſtic plan of treatment; but ſoon learned in many caſes, it would not ſucceed without phlebotomy; and as this was rather uncommon, in an autumnal epidemic, and was entirely oppoſite to the practice, at that time followed by the old practitioners of the city, it required a conſiderable ſhare of fortitude and of reſolution, to ſet it in practice—but as ſoon as it was evident that I could not perform my duty to my patients, without it, I reſolved to run all riſks, as to their approbation. And although the practice was oppoſed violently at firſt, the practitioners were all very ſoon obliged to come into it; and many of them, to carry it much farther than ever I dreamt of, or ever found neceſſary. In this reſpect we could give curious little relations in detail of Dr. R—'s behaviour.

In the early period of the diſeaſe, the moſt proper regimen was acceſſent drinks, of various kinds—neither, indeed had the ſick any appetite for animal food, until their ſtrength began to be exhauſted. We never allowed them even broths, or ſoups, fearing their alcaleſcent tendency; becauſe of the diſeaſe having a ſtrong tendency that way. Which we conſidered was to be prevented by any means in our power; and as there is no vegetable, or farinaceous ſubſtance which has a ſtronger acceſſent diſpoſition than oat-meal, we always recommended gruel made of it. And where my patients would not comply with this—barley water, rice water, ſago, &c. ſome preferred molaſſes and water—we never ſaw it uſed by the ſick before, and at firſt thought it rather uncommon for a drink; but on conſideration of its acceſſent properties, we indulged them in it, and it anſwered very well. But during the inflammatory ſtages of the fever, we always enjoined them taking all their drinks warm, and keeping moderately covered with clothes. For a gentle perſpiration was a very deſirable circumſtance, where it could be procured, without ſtifling the patients, or depriving them of the free and pure air, which was at all times of the diſeaſe, a moſt neceſſary article. Therefore during the warm weather, we obliged the attendants to open the windows, and when calm to keep them open all night; but commonly in my morning viſits, found all ſhut up cloſe again, and the air of the rooms very noxious, by which alone, there is no doubt, but many have died in the diſeaſe, who would otherwiſe have recovered, by more attention to this particular of pure air, &c.

Whenever there was a remiſſion of the fever, which commonly happened after the third or fourth day, if there was not an inflammatory diatheſis preſent, it was proper to give the bark, either by itſelf, or combined with Pulv. Columbo, Serp. Virg. or in caſe of coſtiveneſs, at the time, with vitriolated tartar, &c. or calomel with rhubarb and jalap, &c. or the Columbo or Serpentaria, by themſelves; and we commonly found that they bore the bark better, early in the diſeaſe, than afterwards; and where they could not bear it in ſubſtance, we gave it in decoction or infuſion; and where they retained this medicine, it was of the greateſt conſequence, in preventing the frequent reiterations of the paroxyſms, or relapſes, when they began to recover—for they were left ſo weak, and irritable, that relapſes were frequent, from very ſlight cauſes. Small quantities of the bark was ſufficient; from a drachm or two, to half an ounce, in the twenty-four hours. And as there was always a great deſpondency and weakneſs preſent, whenever the fever abated, a little Madeira wine in their drinks, was very uſeful: and to many indiſpenſably neceſſary, when all apprehenſions from inflammation were over. And this was to be obſerved, likewiſe, with reſpect to the cortex, and bitters; all of which were neceſſary, in recovering the ſtrength of the debilitated, and exhauſted ſufferers; but in the inflammatory ſtages, it was improper. Some were highly prejudiced againſt the bark, after ſeeing the bad effects, which followed the indiſcriminate uſe of it, at the firſt breaking out of the diſeaſe. In the early, and inflammatory ſtages, bark, and wine, being highly extolled, as the grand preventatives of the putrefaction, which was expected to follow, or which they ſuppoſed to be inſpired with the infection, inſtantaneouſly, and by uſing it very improperly; others were deterred from it, at any time—But this was a circumſtance that required circumſpection, and experience to determine when it was admiſſible, and when not. We believe nothing during the courſe of the diſeaſe, required more preciſion, and diſcernment to uſe it with propriety.

However, phyſicians may inculcate the idea, of amuſing their patients with trifles in ſickneſs, there was no time in a diſeaſe ſo rapid and dangerous as this was, to be loſt with ſuch amuſements; nor to wait for nature to point out what was to done, and to only obſerve her motions, and follow them. She was either to be led, or drove, when remiſs, as was often the caſe; and in every period of the diſeaſe, an attentive obſerver would find ſomething very neceſſary to be done, and at the ſame time to give the deſpondent patients all the encouragement of being paſt danger, that was poſſible. For their ſolicitude on that account, was commonly a great hindrance to their recoveries; and ſome required to be rouſed contrary to their inclination to get out of bed, and try to ſit, or to walk—which although very weak at firſt, this was of great importance in their recoveries.

It was remarkable, in this diſeaſe, that from the beginning of it, ſome could get no ſleep for ſeveral nights, until they had a change for the better, for even when they ſeemed to ſleep, it was reſtleſſneſs, and not refreſhing.—And when their ſleep returned, after the third day, it was a good ſign, in general; but ſome, when they did get ſleep, were comatoſe, and lethargic, being as bad on the other extreme. In theſe caſes bliſters were of eminent advantage, and the ſtimulant purgatives before mentioned, as the pulſe was in this condition, generally ſmall and low, and the inflammatory period paſt. But others were comatoſe and lethargic from the beginning, and this ſituation portended a fatal event. Here the inflammatory ſymptoms, in general, ran high, with fullneſs of the blood-veſſels, and blood-letting, and laxatives were neceſſary; and bliſtering was very pernicious, by their heightening all the bad ſymptoms—but Vene Section, and the neutral ſalts, and particularly injections were highly ſerviceable; in theſe the head aches. were ſometimes violent, and in theſe caſes, pediluvia, and warm applications to the feet and legs, ſuch as warm bricks, or bladders full of warm water, ſometimes gave relief—Alſo,

When there was great reſtleſſneſs, and a dryneſs of the ſkin, the warm bath was very uſeful, where it could conveniently be applied; or pediluvia, or warm fomentations to the feet and legs, were eminently uſeful, every evening while the head-ache remained.

In ſome, there was very little remiſſion of the fever, even after the third day; in thoſe where there was no vomiting, and the ſtomach was tolerably quiet and eaſy.—The antimonial powder in very ſmall doſes, every ſix or eight hours, with plenty of warm diluent drinks, anſwered very well, for abating the violence of the fever, and promoting a perſpiration, and keeping the bowels open—and for this intention, they were advantageouſly combined with proper purgatives, ſuch as the ſymptoms appeared to indicate, to aſſiſt it in promoting a diaphoreſis. The neutralized vinegar was a good auxiliary—we commonly uſed the powder only, in doſes of two or three grains, for no larger doſes could be given, for in all caſes, there was ſo much irritability of the ſtomach, that it was too apt to be rejected by vomiting.

The great reſtleſſneſs in ſome caſes would appear to require opiates, but they never were admiſſible, from the beginning to the end of the diſeaſe; for although they appeared to quiet the ſymptoms for a little, they ſoon returned, with aggravated fury; and either extinguiſhed life, or heightened the diſeaſe, and always made the coſtiveneſs more obſtinate; even in the ſmalleſt doſes, they had bad effects. But camphor, in the low irritable ſtages, was ſometime very uſeful; we once ſtopped an obſtinate vomiting, with a ſolution of it in ſpirits, which, for ſeveral days had reſiſted a number of other medicines. This was in a ſlender woman, about the 12th day the diſeaſe, but it did not appear to anſwer in the inflammatory ſtages of the diſeaſe; for then the ſtomach generally rejected it. Being very often ſolicited to give opiates, to procure ſleep and eaſe the pain, I conſidered it my duty to continue inflexible to the ſolicitations, either of the patients, or their friends, repreſenting to them the danger of ſuch remedies, and they were under ſuch apprehenſions from the diſeaſe, that we believe they ſeldom diſobeyed theſe orders. When they were weak and exhauſted, with the ſickneſs and watching, inſtead of opiates, we frequently recommended a little good bottled porter, and with many it agreed well, and they were fonder of it than of wine, or any other cordial; the fixed air in it was extremely agreeable to them.

From the method in which ſome practitioners here began the treatment of this diſeaſe, by bark and wine, it muſt be evident, how many diſcouragements any perſon laboured under, who wiſhed to introduce a cool regimen, and to begin with the antiphlogiſtic plan; more eſpecially for an unpatronized, and friendleſs ſtranger, who had not a great number of years experience—as many people chooſe their phyſician as they would their liquor, by the age, and take a grey head for a mark of good ſenſe, and experience; though ever ſo inferior in penetration. It is true an odd one might live, under the moſt prepoſterous treatment: ſuch as the cold bath; bark and wine, and mercurials at firſt, and ſuch like treatment—and ſome die under the moſt judicious plan. But with a perſon of good ſenſe, the method by which the greateſt number, in ſimilar caſes and circumſtances were ſaved, muſt be preferred.

In ſome of the tedious caſes, obſtructions of the viſcera and ſwellings of the abdomen, were troubleſome ſymptoms, and very obſtinate; we ſuppoſed the meſſenteric glands to be affected; for although they took food, and drink, they were not nouriſhed by them. This was beſt cured by calomel, in ſmall doſes, often repeated, with ſome of the ſtimulant purgatives; theſe were very tedious of recovery to their former ſtate of health.

In ſeverals there were abſceſſes formed in the lower extremities, ſome of which were very dangerous and tedious, and difficult of cure. We always encouraged their ſuppuration by poultices and fomentations, and diſcharged the matter by inciſion, ſuppoſing them to be critical, and that diſcuſſing of them, might be attended with bad conſequences; in every one of my patients, who had them, we could trace them to getting cold, in the firſt, or inflammatory ſtage of the fever, as many were very careleſs in this particular: toſſing the bed-clothes off, and reſtleſs, fretful, &c. which always added to their danger, and was a very bad omen, wherever it occurred.

Small pimples about the mouth, were a good ſymptom, or eruptions of any ſpecies; not that the ſmall diſcharge could be of any conſequence, but they were an indication that the vital ſtrength was not exhauſted. Some, and eſpecially children, bled at their mouths, in ſmall quantities, and of a thin ſubſtance; the blood blackening their teeth, and lips. But although we often examined narrowly into their mouths, we never could diſcover where it came from, moſt of thoſe lived, who had this hæmorhage.

In October, and the latter part of September, we could always obſerve the effects of a few days of cold, or windy weather, thoſe who were ill before, generally got better by it, and others were not ſo apt to be taken; this gave me the firſt hopes, that the diſeaſe would diſappear in winter. It was likewiſe, a ſtrong recommendation of cold, and free air, in the time of the diſeaſe, after the inflammatory ſtage was over to breathe freſh and cold air, keeping covered with the bed-clothes at the ſame time; but coldneſs alſo had its limits.

It may now be proper to take a retroſpective view of this dreadful diſeaſe, and conſider its nature: at its firſt appearance among us, and even long after, we thought it might have been generated here, by the heat of the ſummer; and the great number of perſons who were in the city; but upon more mature reflection, there are many reaſons againſt that opinion—for we may eaſily perceive, that along with the ſymptoms of the bilious remittents of warm climates, there were a complication of typhous appearances; and alſo the moſt virulent infection, often very obſtinate and intractable. In ſome it reſembled an ardent bilious fever; and in others it was more like a remittent, and as the weather became colder, it had much of a typhous appearance. So that upon the whole, we ſuſpect there was imported infection. For the genuine typhous fever, is a very different diſeaſe, both in its nature, and orgin from this. Remittent fevers, whether bilious, or not, never are ſo very deſtructive as this was; unleſs where infection is either generated or imported; and ſeamen, from their modes of living, confinement, and want of air, eſpecially in ſhips of war, where the men nave ſcarce room to ſleep; we would ſuppoſe are ſources, either for the generation, or for propagating infectious fevers.

Soon after the ſettling of Barbadoes, it appeared there, but it ſcarcely ever appeared in times of peace, and it has often been forgotten between one war, and another; and we have no doubt but it might be carried to thoſe parts of Europe where their ſummers are warm enough to prediſpoſe men to it.

But as theſe cauſes do not produce the diſeaſe, we would be led to ſuppoſe, that it is not a ſpontaneous production of the climate, but of a foreign, and probably a peſtilential origin; for it appears to have many of the ſymptoms of the plague, for its inſeparable attendants, particularly the burning pain, heat, and inflammation of the ſtomach, for theſe we never ſaw abſent in any caſe; and however proper it might be, while the fever raged, not to give a diſeaſe ſo dreadful its real name; yet we believe a peſtilential fever is the moſt proper epithet for it—very uncommon diſeaſes rarely ever appear without infection; for the diſeaſes of the ſeaſons, the climate, or local ſituations recur ſo often that they never cauſe any extraordinary alarm, but return periodically, and ſpread gradually; and even where infection is generated, it is not produced inſtantaneouſly, but becomes ſo by degrees, by the effluvia from perſons in the ſame diſeaſe being concentrated, and acting on perſons prediſpoſed; but we had no fever here before the late infectious one appeared, and from its firſt beginning it exhibited ſomething extraordinary in the mortality and rapidity of its progreſs.

Towards the latter end of October, and November, it was neither ſo dangerous, nor ſo rapid in its progreſs; for in ſome it continued then to the 21ſt, and in many to the 14th, or 17th day—but in Auguſt and September, if the ſick paſt the ſeventh, or at fartheſt the ninth day, they might be pronounced out of danger, and they commonly recovered ſoon, its termination being ſo rapid, either to health, or death, that the patients were not much exhauſted. One of my patients a Mr. Kay, a young man from England, who had expoſed himſelf much to the infection, was only ſix hours ſick with it; my own caſe continued two nights, with very little uneaſineſs on the intermediate day; ſo that I viſited my patients as uſual, although my fever was extremely violent in the night, being taken about noon it increaſed gradually, with a heat and uneaſineſs at my ſtomach, and a head-ache, until about nine o'clock; I took an emetic, and before going to bed an antimonial powder, and ſome warm gruel, hoping that this would put me into a perſpiration, and went to bed, but could not ſleep; and before twelve the burning heat in my ſtomach and thirſt was ſo great, that it was totally inſupportable; not foreſeeing this, and wanting drink, I got up and felt my ſtrength not in the leaſt diminiſhed, and wiſhing not to alarm the houſe, got ſome cold water—but in a few minutes the ſame ſenſation returned, with increaſed violence; it was now plain that cold drink would not anſwer, and ſome warm gruel was ſoon prepared, of which drinking about half a pint, it vomited me immediately; without any nauſea or effort on my part, the burning thirſt ſtill continuing the ſame—then I began to take only about a wine glaſs full at a time, and in theſe quantities, it ſeldom vomited me; and I took alſo ſome Rochel ſalts, with ſyrup of buckthorn, in ſmall quantities, and alſo a grain or two of antimonial powder; and towards day the purgatives operated, from which the fever went off gradually, and I got ſome ſleep, and next day was much better; I then took blood of myſelf, until I fainted, and walked about the moſt part of the day; but the next night the fever returned as violently as the firſt, and the ſame mode of treatment was purſued, and the next day it went off as before, but left a melancholy ſtate of mind after it, but did not return with the ſame violence any more, but the diſtreſs which was about me, was probably the cauſe of a melancholy, which remained about me for a week after. At this time no conſideration would have detained me in Philadelphia, if I could have got away, but the ſtages being all ſtopped, and not knowing where to go; at that time I conſidered the place as my tomb; but ſet about attending my patients again, and the exerciſe and new objects alleviated my mind; and ſoon wore off the deſpondency which hung about me. It is rather wonderful that the perſon who tied up my arm, and aſſiſted me in taking blood, being taken with the fever himſelf the ſame day, would not ſuffer himſelf to be bled, ſo prejudiced was he in the popular opinions, at that time ſo prevalent; but being myſelf ſick at the time, he appeared to ſuppoſe me delirious, and would have farther advice; by which means time was loſt, and nothing deciſive done at laſt. For he required bleeding, to at leaſt five times the proportion that I did: but having been unfortunately told, a day or two before, by a phyſician whoſe opinions he valued highly, that wine and bark were the grand ſpecifics, both for prevention and cure, he uſed them as long as he was able.

The yellow colour is probably cauſed in this diſeaſe, by an inflammation of that part of the inteſtine where the biliary duct enters it, by a ſlanting courſe, which may obſtruct it as a valve; a jaundice is ſometimes cauſed by this, and ſimilar means—the irritation of worms alſo cauſes a jaundice often.

The irritation and inflammation of the ſtomach, appears to cauſe the ſpontaneous vomiting; but although a mucus or ſerous ſubſtance is ſecreted by the villous coat of the ſtomach, when inflamed; yet we believe the matter of the black vomiting is always from the liver, the craſſamentum of the blood, being admitted into the biliary pores, from whence it is conveyed to the ſtomach by the vomiting.—In Dr. Wiſtar's hiſtory of his own caſe, he remarked the ſpontaneous vomiting being produced without any nauſea, or effort. He alſo made ſome intereſting remarks on the effects of the medicines, and regimen, but particularly on the effects of cold air in the advanced ſtages of the diſeaſe. The peruſal of this caſe, afforded me ſome pleaſure in thoſe times of confuſion, and diſtreſs: and we believe it has not been hitherto exceeded, for accuracy of deſcription, &c.

It is a truth which has been long known, that a phyſician who is well acquainted with medical philoſophy, may not only thereby be prepared to obviate every unuſual ſymptom, which may happen in any common diſeaſe; but he is alſo capable thereby, of encountering any new diſeaſe, although he had never heard of its name before. We believe that no perſon, who knows the extent of medical ſcience, will doubt this.

To many it may appear extraordinary in me, to adopt a practice which was known to be diametrically oppoſite to that of the times. My ſituation was certainly critical—

the general attention was ſoon turned to any new mode of practice, and the oppoſition it met with at firſt, is well remembered by many; but as my former employment had turned my attention to judge for myſelf in all caſes; conſultations being there often impracticable, and here, at that time, it was ſoon diſcovered, that opportunities were often loſt by the delay they neceſſarily required. In this ſituation, conſidering my right to uſe my own ſenſes, as well as formerly; and the reſult of my experience and judgment, to ſave the lives of my patients, and not ſervilely follow names, or bodies of men; ſo that with not a friend or acquaintance of ſix months duration in the place, it is very evident, that nothing but a firm perſuaſion of the rectitude of my conduct, could have ſupported me, together with a firm perſuaſion that thoſe principles of medical ſcience, which had often before carried myſelf and others, through various dangerous ſituations, would not deceive me at that awfully diſtreſſing period, when ſickneſs, death, and deſolation, were ſpreading all around me. This was certainly a time to rouſe every latent power of the mind; my principles and practices, were communicated without reſerve, to all thoſe who converſed with me, as ſome of them will yet bear witneſs to; particularly Mr. Robert Patterſon, profeſſor of mathematics, Mr. Robert Underwood, of the treaſury office of the United States, and Dr. S. M'Culloh; theſe gentlemen knew of my practiſing, and recommending the modes of treatment, which were ſoon after received as a new improvement, for ſome time before any other in the city. They are alſo partly acquainted with the oppoſition which they met on their firſt introduction, and the rationale on which they were founded; and alſo the cauſe of the quick tranſition which took place after the fifth of September. Before this there was no competitor for any of my modes of treatment; but very ſoon after there were many; for in a few days, my moſt violent opponent made no ſcruple, not only of adopting ſo much of it, as he had learned by an accidental interference and its conſequence, but alſo of publiſhing it as a diſcovery of his own, but carefully concealing the real circumſtances of the caſe. (See Brown's newſpaper for September

1793, and the following ſtatement of facts.) But it is a peculiar happineſs that myſelf and my opponent are yet as ſane both mentally and phyſically, as at that time; he has therefore a fair opportunity of making the proper reparation, or apologizing for, or explaining ſuch unprecedented conduct as he exhibited in this dark proceeding; for he may ſtill expect one in me, as ready to meet him as formerly, in the defence of truth, in any department of phyſical or medical ſcience or practice. More rude means we ſhall leave to thoſe whoſe profeſſions require ſuch modes of deciſion; and that his dignity may not be ſuppoſed to ſuffer on the occaſion, he is requeſted to recollect, that one who taught him a uſeful leſſon, has a right to expect ſome conceſſions.

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A statement of the author's claim to the discovery of the improved method of treatment in the Pestilential Fever Philadelphia, in the autumn of 1793, *in opposition to the pretensions of Dr. R——, and others.*

* * *

Medicina res publica eſt, non autem monarchia, multo minus tyrannus. *Baglivi, op. p. 744.*

TO be under the neceſſity of commemorating injuries is extremely diſagreeable, eſpecially thoſe which we have perſonally borne. Conſiderations of this nature have prevented the preſent ſubject from being laid before the public theſe many years paſt. But as it is a regulation in civil ſociety, that when one perſon in any line of life endeavours in a flagrant manner, to injure another, it is naturally expected, that there ſhould be ſome means of redreſs; which if the aggreſſor is not impelled by ſentiments of morality, or candor to perform himſelf, there are in ſome circumſtances, means to oblige him to it; but as this is not always the caſe, we may often have no other reſource, than the judgment of the public. When after a ſeries of years, ſo far from having had any reparation made, we have but too much reaſon to conclude, that the ſame principles, which actuated the firſt breach, are ſtill in operation, but in a more inſidious and guarded manner. It is high time at the end of eight years, to lay a tranſaction open to the public, which has been ſo cautiouſly concealed from it.

September 4th, 1793, about ſeven o'clock in the afternoon, Mr. Hugh Roſs came for the author to viſit his wife and ſon, whom he ſaid had been both taken with the fever that day; his wife had been taken about 12 o'clock, and his ſon between five and ſix, or only an hour before this viſit. This woman being of a maſculine conſtitution, and her pulſe and countenance indicating an inflammatory diſpoſition, bleeding was propoſed as the firſt part of the treatment, which after ſome heſitation, on account of the general diſapprobation of this practice, at that time, was at length reluctantly conſented to. The ſon's fever not having yet raiſed high, he was not bled; but both of them had gentle laxatives, &c. But having called a ſecond time, at ten o'clock the ſame evening, the author was told that Dr. B. R— had been there a little before, and alſo that he conſidered Mrs. Roſs as his patient, having been called to her ſoon after her being taken ſick. It was alſo mentioned that he had made a very great noiſe, and condemned bleeding as a murderous practice in that diſeaſe, and uſed ſeveral rather virulent and bombaſtic expreſſions, which immediately made a conſiderable noiſe about the neighbourhood. When theſe proceedings were mentioned to the author, he replied, that as to what Dr. R— ſaid or thought of his practice, he could not anſwer, as it was well known, it was not of him he had learned his practice, neither had he any reaſon to follow his example; but that he would take the firſt opportunity of waiting on the Dr. for an explanation of theſe proceedings; and next morning about ſeven o'clock, he called at Dr. R—'s houſe, and met him at his own door, accoſted and told him his name, and the occaſion of his calling, as this had been the firſt time he had called with him. On this occaſion, Dr. R— appeared to be much agitated with the paſſions; which, as it was altogether a medical interview, we ſhall only mention the predominant ſymptoms—theſe were a pale face, a trembling of the lips, and faultering ſpeech—Ominous phenomena it muſt be confeſſed, and ſo we found them. When the author aſſured Dr. R— of his not knowing when called to Mrs. Roſs, that ſhe was under the care of any other phyſician, he behaved in a manner very different from what we would expect in a phyſician or philoſopher; his words were unqualified, and rather virulent—ſuch as we muſt ſometimes have heard from perſons, who bore very different characters. On which the author remarked to him, that had he not entertained a better opinion of his liberality, from a book of his which he had read, he would not have taken the trouble of calling with him. But as for the practice which he followed, he mentioned that a few days would determine its merits; for with him it was no random proceeding, but the reſult of mature deliberation in the preſent diſeaſe—having followed it on the recommendation of, and with the approbation of the examining phyſicians in his former practice, in the employ of the E. India company: (Dr. Hoſſack had particularly recommended it, and Dr. Lorrimer had approved of it, in young, ſtrong perſons, in all their diſeaſes, where there were any appearances of inflammation preſent,) and in the preſent diſeaſe, he was not afraid of defending it before the higheſt authority. About this time Dr. R— getting a little more calm, aſſured the author that this affair was certainly proſecutable: to which the author replied, that as medicine had been his ſtudy, he was not certain what the laws of the place were in that reſpect, although he knew of no juſtice, which would condemn his uſing all his endeavors to ſave life, when requeſted.

After much altercation, Dr. R—'s paroxyſm being almoſt over, it was mutually agreed, by his own propoſal, that the author was to have the care of the ſon, as he had firſt ſeen him, when taken ſick; but that he was to have the mother for his patient, as he had firſt ſeen her, and not to interfere with one another, in their reſpective modes of treatment; this the author conſidered as an amicable ſettlement, and ſo ended the interview.—This was September 5th, between ſeven and eight in the morning; and that day and the next, each attended their own reſpective patients. Here the author expected candor, which he practiſed ſo ſtrictly, as never more to enter Mrs. Roſs's room, although ſolicited every time he called to viſit the ſon: but the third day, September 7th, he found that Dr. R— had not behaved with the ſame candor towards him. But the means by which he took this patient from under the author's care, are beſt known to himſelf; for no witneſſes remain of that houſe—We learned that he taſted the medicine, and ſpit it out with a ſignificant air, and condemned it. It is very plain, the author might have taken the mother from under his care, by his being called in after him. Some other of the circumſtances of this proceeding, which afford much room for reflection, we ſhall not mention on this occaſion. The former behaviour might have happened through paſſion, but this had the appearance of ſomething very different.

The author's ſmall circle of acquaintance, and himſelf, thought that this would have been a fair trial of their different modes of practice; and a certain old acquaintance of Dr. R—, gave the author ſome characteriſtic hints, on the occaſion, as he was a ſtranger. As ſoon as the nurſe related the particulars of this interference, the author could not avoid conſidering himſelf as very ill treated by both parties in this proceeding, and left the houſe with a promiſe of never returning to the ſame people; by which means Dr. R— had the excluſive treatment of them all his own way.

We learned afterwards that the mother and ſon died between the ſeventh and ninth day. Roſs himſelf, and the nurſe ſoon afterwards. It is probable, that the reaſon of the author's being called to this family, was his having juſt before brought Mrs. Millon, their next neighbour ſafe through the ſame fever.

The change which took place in Dr. R—'s conduct, and practice about this time, is yet very well remembered by many of the inhabitants of Philadelphia. Before this time he did not bleed in this diſeaſe; but the extent to which he carried it afterwards, is well remembered, and alſo the means by which he became acquainted with it—For which ſee Brown's newſpaper, for thoſe times, particularly a letter to a Dr. Rodgers, of New York, in which he ſays "that by the tenth of September, he found it neceſſary to begin to bleed." We believe he began it about the ſeventh, when mention was alſo made of his having found out the right method of treating the fever, and boaſting that he would now cure 99 in the 100. But the author diſavows his ever giving him any ſuch ſanguine hopes as this, or ever inculcating general phlebotomy, or the indiſcriminate uſe of calomel, for this he denounces moſt ſincerely. But it is remarkable that a practice which Dr, R— had ſo lately condemned with ſuch virulence in another, he now got ſo good an opinion of, as to father for his own, and could even quote ſome authors in its favor; particularly Dr. Moſely, whom the author had mentioned as an authority for his practice; and ſo he might many others, after he had been aſſured of its advantages in the exiſting diſeaſe, for without this, it is probable the books might have been as dumb as before, when under the duſt of the ſhelves, all the preceding time of the diſeaſe.

The next time which Dr. R—, and the author met, was in the beginning of the next winter, at N°. 40, Cheſnut ſtreet, where mention being made of the former interference—the author requeſted Dr. R—, to do him juſtice in that affair, as he knew that he was then writing an account of the fever; this he expected that he would have been generous enough to have mentioned, as it occurred. But it is an old remark, that ſome perſons can never forgive thoſe they have injured; this was probably never more fully exemplified than in this inſtance. But over the whole of this dark proceeding there is a myſterious veil drawn. Had he mentioned this fact in any of his publications, as it occurred, it probably never ſhould have appeared here. For although the author was often ſolicited, ſoon after that fever was over, to publiſh the whole of this tranſaction; it being conſidered by all thoſe, who were acquainted with the circumſtances of it, as being of ſome importance, with reſpect to the cauſe of truth, and juſtice, as well as to himſelf, but it might probably have ſtill remained in ſilence, had it not been mentioned ſometimes of late, that there were reaſons for this delay. Dr. R—'s, ſeniority is the only reaſon which the author acknowledges, and on that account, he has given him ſufficient time to relate this affair. Among ſome claſſes of men, we could only expect ſuch behaviour as this. In the liberal profeſſion of medicine, we have generally found better; and we ſtill hope, that liberality is not totally baniſhed from the inhabitants of our globe. As to the facts ſtated here, there are ſtill living, ſome reſpectable inhabitants of Philadelphia, who gave the author leave to uſe their names, in confirmation of them. We yet hope that they, and many others who are acquainted with theſe circumſtances, will ſtill retain ſo much of the genuine ſentiments of candour, as to vindicate the cauſe of truth, and juſtice, and this is requeſted of them; and as it is known to be an inherent principle in all generous minds, the author entertains no doubt, but they will comply with it, even at this late day.

When the French phyſicians got into practice, ſome of them, who had ſeen practice before, uſed a method of treatment, not much different from that followed by the author; only that ſome of them placed more dependance on acids than he did. But at the time he begun it, he did not know of one French phyſician in town, nor for a conſiderable time afterwards, at leaſt not until after this interference; ſoon after which, it was heard of, by all the medical men in town—being in a day or two mentioned at a meeting of the College of Phyſicians, which body Dr. R—, has never ſince attended with his old aſſociates. And even refuſes conſulting with thoſe, who take the liberty of thinking for themſelves, eſpecially if they ſhould be ſo unfortunate as to differ from him. It is well known that a phyſician, who cannot think, or act for himſelf, is a meer cypher, and a man who cannot bear either competitors, or equals, is a very bad republican; for the politics of a Robeſpierre, or the religion of a Cromwell, can only deceive the thoughtleſs. Such behaviour does not well agree, with the prefixed ſentiment of the juſtly celebrated Baglivi, who although phyſician to the Pope, knew what belonged to the liberality of his profeſſion.— But what are we to ſay of Dr. R—'s threatened proſecution?

We have ſince learned that every perſon in a dangerous ſituation, is at liberty to change their phyſicians at any time, and few old ones, on being told of a younger being called in their abſence, would be very ſolicitous about regaining them. But as juſtice cannot hang all on one ſide, we believe Dr. R—, laid himſelf open to law here. Had the authors improvements, at this time, proved abortive, his fate may be very readily conceived; but as they overcame all oppoſition, in a very ſhort time, it was both unfair, and ungenerous, to endeavour to rob him of the merit of their introduction. With reſpect to this affair, it is hoped that names will not ſo far pervert men's judgments, as to give them an undue bias. It may be alſo premiſed, that it will be conſidered both as unjuſt, and ungenerous, if any others interfere in this matter, but the parties who were perſonally concerned. Therefore, intruding volunteers, may expect their deſerts; for we know of no good principle, which would juſtify uncandid proceedings, even in ſmall affairs. However the introduction of a mode of practice, which it is highly probable, has ſince ſaved the lives of ſome hundreds, or even of thouſands, was an object of ſome importance. Neither ſhould theſe improvements have been unpubliſhed at that time, had not Mr. Brown, to whom the author handed a paper at that time, neglected inſerting it, becauſe it did not come recommended by a popular name. Neither do we conſider religious ejaculations, which when preſſed into foreign ſervices, are unfortunately too often proſtituted to hypocritical purpoſes, or the reiterated profeſſions of Pſeudo philanthrophy, or morality, or the oſtentatious diſplay of borrowed hypotheſis, and ideal ſuperiority, or the perverſion of reaſon, and the experience of ages at all neceſſary in order to eſtabliſh his principles. Yet he does not aſpire to the honour of a perſecution, like Socrates by the Sophiſts, or Galileo, by the ignorance, the prejudice, and bigotry of his times, ſor the ſake of *truth*.

AN

Historical Introduction

TO

PHYSIANTHROPY,

OR, THE EXPERIMENTAL PHILOSOPHY OF HUMAN LIFE,

THAT OF DISEASES, AND ALSO OF REMEDIES.

> Deſideratur nimirum, Philoſophia Naturalis, vera et activa, cui Medicine Scienta inædificantur.
> ——————*Baccon de Augment. Scientia.* Lib. IV. Cap. II.

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OF all the phyſical inveſtigations, which have at various times employed the human mind, there are certainly none of greater importance, than the ſubject of the preſent inveſtigation: but although it is peculiarly intereſting to the phyſician, it is alſo eminently ſo to all mankind, for an acquaintance with the phyſical nature of human life and health; and their various ſtates and affections, &c. are obviouſly of much greater moment, than any other natural ſubjects. For hereby it is obvious, men may learn to guard againſt diſeaſes, although it does not follow as a neceſſary conſequence, that every one ſhould arrive at ſuch perfection in this ſcience, as to become adepts in the art of healing; although we believe it is ſometimes practiſed without this moſt neceſſary part of ſcience.

There is in all living animals, a principle, the effects of which are obvious to all men, during the preſence of which there is life, but in its abſence death, this we may nominate vitality. It is a principle, infuſed by the Supreme Being, through all living creatures, under various modifications, which in the animal creation, is as univerſal as gravitation in the univerſe. And although they may be both equally obſcure, in their cauſes and modes of operation, yet we may obſerve, experience, and reaſon on their effects; and collect the reſult under different heads, claſſes, or ſpecies, and the information which we acquire hereby, may very properly be called the philoſophy of the human body; and of its diſeaſes, when we confine ourſelves to it. But when we take into the account, other ſubſtances or cauſes, which affect the human body; it might be called medical philoſophy. But as life cannot exiſt in any animal after birth, without the acceſſion of external ſubſtances to the body, therefore, we cannot conſider human life, as at any time independent of them, and by itſelf; as that is a ſtate which never occurs. And therefore we can have no experimental knowledge of it, unleſs in the embryo; and in that ſtate they act on the mother. But amidſt the variety of ſubſtances, which continually ſurround us, we are to make animal life, as it operates in the human body, in health and in diſeaſes, the primary and great object of our attention. But as the intercourſe between the mind and body, is ſo obvious and conſtant, it will be neceſſary, on ſome occaſions alſo, to pay particular attention to the mind.

Some of the moſt general and obvious properties of vitality, are ſenſibility and irritability, theſe were formerly ſuppoſed to be one and the ſame property, and were always confounded ſo, until Haller endeavored to prove that they were different, and reſided in different parts of the compoſition of the body, but although it is certain that many parts are irritable, which are not ſenſible, yet we are not ſure that all ſenſe is not cauſed by irritations, as that is not eaſily demonſtrated, for it is probable that ſenſibility is cauſed by more forcible, or ſtronger varieties of irritations, on parts properly organized for the purpoſe, this is very probable, and there are good reaſons for it, as will be ſhewn in its proper place, and ſympathies, or conſent of parts, are only ſecondary irritations, propagated from one part to another, as the part primarily affected is ſaid to be irritated, but when that irritation is communicated to another part, this is cauſed by ſympathy or conſent, but aſſociation, we would wiſh to confine to the mind as formerly.

The vital principle, like many others in nature, we have ſufficient reaſon to believe, may be preſent in a latent ſtate, and lye dormant for ſome time, and afterwards ſhew itſelf, when acted on by ſtimuli, as in fainting, catalepſy, &c. in human ſubjects, and in theſe animals, which exiſt in a torpid ſtate in the winter, as ſnakes, alligators, frogs, &c. the ſtimulus of heat is only wanted, to rouſe the vital principle, to energetic actions for life: or its principles, muſt be preſent, or they could not recover merely upon the application of heat. And in catalepſy or fainting, by irritating parts which are ſuſceptible, as the noſe, or the ſtomach, it being eaſily affected by an emetic, a practice which medical philoſophy directed us to, the firſt time that we knew of it ſucceeding in this diſeaſe, and irritating the nerves of the noſe, by ſnuff, volatile alkali, eau de luce &c. or the palate and ſtomach, by ſomething ſtrongly ſtimulant, &c. are very uſeful in recovering perſons from fainting, or hyſterick affections; all theſe ſhew evidently, the power of ſtimulants, on the vital functions of animals, under which we include, what were formerly called, natural and animal, as the diviſion and the terms are of ſcholaſtic origin, the defects of which have been often remarked. Many parts in which the vital principle exiſts, are not ſenſible, through want of a more compleat, or appropriate organization, which their uſes do not require. But ſenſation requires organization, or a peculiar intertexture, of the blood veſſels, and nervous medulla, principally this laſt, which is the reſidence of ſenſibility, as experiments have often demonſtrated of late: although the coats of the large nerves are ſaid, by Haller and others, to be deſtitute of ſenſation, and the whole trunks of the nerves, according to Robinſon, on the animal economy, and alſo many other parts when in a healthy ſtate. But when any of theſe parts are diſeaſed, they are endowed with a very acute ſenſibility, as experience teaches. This appears to be cauſed by increaſed, or new actions of the diſeaſed parts. Diſeaſes often increaſe the ſenſibility, as we may obſerve, where there is much irritation, as in wounds, ulcers, &c.

As the vital principle is conſtantly flowing into all parts when in a healthy ſtate, if the parts are uſed in the exerciſe of their functions; by moderately expending their vital energy, both the inherent ſtrength, and the vital energy, are thereby increaſed: as we may daily obſerve, in the exerciſe of any limb, or organ, of young, or middle aged people, and in the heart, inteſtines, or ſtomach.

We muſt allow of a ſtate of inherent ſtrength in animal bodies; as it can eaſily be proved that the fibres and membranes of full grown animals, are much ſtronger than they are in childhood or infancy. This is what we are to underſtand by inherent ſtrength, or vis inſita, in oppoſition to weakneſs; but the vital energy is a different property, and it is more unſteady—always accumulating, and as conſtantly exhauſting, and not long in the ſame proportion, in any part. As air, aliment, or exerciſe may be regulated, and the habit of the patient may be tempered originally; for the ſame food does not always produce the ſame ſtature, ſtrength or vital energy; nor does the ſame education often produce the ſame information.

In childhood, we can eaſily prove, that the ſolids, and even the bones, are ſoft and flexible, and that they grow ſtronger and firmer, as we advance in years, until we arrive at our acme, or height of bodily perfection; and after that they become over rigid, and the influx of the vital principle, which is moſt abundant in youth, particularly in infancy, becomes gradually leſs as we paſs our acme, until in old age it becomes very deficient; but varies at all periods, according to the ſtate of bodily health, eaſe of mind, &c.

The female ſex, are commonly originally weaker than the male; and leſs in ſtature; and their modes of life in civilized countries, commonly increaſes their delicacy, more than it does that of the males.

To underſtand the human body, and the laws by which it is governed, and its diſeaſes, &c. we muſt conſider it under every circumſtance, and in every point of view in which it may be placed, either from internal, or external affections, and take all our facts from nature, and exclude opinion where ill founded, and only admit of obſervation, experience and reaſon. This plan will lead us to admit every thing, which is really true in fact, but nothing imaginary. On this account, we would not aſſert that all animal life, and its phenomena, depends on the irritability of organized parts, although it is certainly a very general property of the vital principle, as vital ſtrength, and perhaps other unknown properties, may belong to vitality, with which we are yet unacquainted. As electricity and magnetiſm were many thouſand years unknown to mankind, ſo was irritability itſelf; and others may yet be diſcovered.

We may obſerve any part of the works of nature, without paying attention to them, or without ever learning how cauſes produce their effects, or any other of its laws or phenomena, and great wonders, or even miracles are daily happening before us; but becauſe they are common, we pay little or no attention to them. But when an enquirer wiſhes to inveſtigate theſe matters a little farther than external appearances would lead him, he is under the neceſſity of adding experiment to obſervation; and ſometimes muſt put nature out of her uſual routine: and in the ſame manner may we become acquainted with the philoſophy of the human body, as well as with any other ſubject in nature; for the doctrine of life and health, cannot be well known by reaſoning *a priori*; but it often may, from ſickneſs, its oppoſite, and from wounds, morbid diſſections, and medical experience. Therefore it is rather over-ſhooting the mark, to admit ſo many diviſions of the theory of life and diſeaſe, &c. as has hitherto been done, ever ſince Galen's time. The laws and principles therefore, ſhould be divided in a different manner from that of the ſcholaſtic, &c. The human blood appears to be recipient, and the vehicle of heat and life, to the different parts; and by ſome late experiments it would appear, that the pure principle of the air, is the pabulum of irritability,—for being deprived of pure air, deſtroys life ſooner, than the defect of any other natural ſubſtance, although the inſpiration of fixed air, or a large quantity of electric fluid, kills inſtantaneouſly, by extinguiſhing the vital principle, but here we may obſerve, that the extraction of irritability, is moſt probably the cauſe of all theſe phenomena which follow. Beſides, the blood being the vehicle of heat, and oxygene, it does other offices in ſupport of vitality, &c. by the irritation of diſtention in the heart, the ſmaller blood veſſels, and the glands, to which it alſo furniſhes fluids, for the different ſecretions, and likewiſe for nutrition, ſo that it is neceſſary to every vital part of animals. The fluid next in importance to the animal economy, or perhaps the firſt, is the nervous fluid, or the medulla of the brain, and ſpinal marrow, for they are all of the ſame nature, and origin, ſecreted in the critical part of the brain, as appears by reaſon, and experience, for this fluid is a glutinous, or mucous ſubſtance; is eaſily ſeen and demonſtrated at its ingreſs into the nerves, and at every part of them, which is large enough for the demonſtration, and is diffuſed over every ſenſible, and irritable part of the bodies of animals, and preſerves their moiſture, and is the vehicle of ſenſation to the ſenſorium, or mind, and probably directs all its actions.

As the plan we mean to purſue, is in ſome reſpects new, it may be neceſſary, in order to give determinate ideas of our terms to define the ſenſe in which we uſe them, although they are not new.

The term of elements, appears to be going out of uſe at preſent, becauſe, of ſome modern improvements in our modes of inveſtigation. Many ſubſtances formerly ſuppoſed to be elementary, may now be ſeparated into their component parts, each of which claim the title of elements; ſo that the former elements are now found to be compounds, and by a ſimilar mode of reaſoning, ſo may theſe laſt, by future analyſis, &c. But as the term, when defined, ſtill has its uſes and applications—we underſtand by elements, the moſt ſimple component parts of bodies, which are, or can be made the objects of our ſenſes, primarily, and by themſelves. And principles, we underſtand to be thoſe component parts of ſubſtances, which are not, or cannot be made, the immediate objects of our ſenſes, and are only known by their effects ; they may be ſaid to be ſecondary elements, and in this view of the terms, our ſolids, and fluids may be reduced to their chymical elements, and inſtead of earth, water, oil, &c. we may have azote, hydrogene, carbone, &c. And we have examples of principles, in the vital energy, irritability, ſenſibility, elaſticity, and innate, or inherent ſtrength, the conteſted (vis inſita.) Theſe are merely nominal, expreſſing only the names of things—but there are alſo verbal expreſſions, to ſignify their modes, or manners of acting, and their laws, derived from their modes of being, or acting. Properties, or habitudes, we underſtand to be modes of action, whether of natural ſubſtances, or their component parts, elements, or principles, ſo long as we are uncertain of their modes of action, to reduce them to general laws. Laws are in part explained by the preceding definition ; they are thoſe fixed, unalterable, and well known modes of action, or properties, which are certain, ſenſible and permanent ; and not liable to change : ſo that properties, when well known and eſtabliſhed, and their modes, and circumſtances of action, recur invariably under the ſame known circumſtances, may be conſidered as laws.

In whatever light we view medical ſcience, we ſhall find the phyſical nature of man obtrude itſelf into our view, as the connecting medium of all rational inveſtigation. It is, we may aſſert, the ſpirit of all medical philoſophy, without which all others are of little value. It is by the application of this ſcience, that we inveſtigate the nature of health, from the effects of diſeaſes, and the operations of remedies from both ; but it is more frequently applicable, in tracing the nature of diſeaſes, and of health, from the moſt effectual remedies uſed in their cures, for we can ſeldom reaſon juſtly *a priori.* In theſe ſubjects, therefore, we muſt in many caſes, have recourſe to our experience in the treatment of diſeaſes. As an apology for the introduction of a new term into the profeſſion, we may obſerve, that no other could ſo well expreſs our meaning. Its derivation (from phyſis, nature, and Anthrops, man,) will readily be perceived, to be from that language, in which medicine was firſt taught in a rational manner; and from which of conſequence, moſt of our terms are derived.

Phyſiology in its general meaning, is a term too extenſive, comprehending all the ſubjects of nature; but in its medical acceptation, it is too much confined, being only applied to the healthy functions of life. And in all medical language, we cannot find any word to expreſs the healthy, the morbid, and curative nature of the vital actions, this alone excepted; for the animal economy does not expreſs it; neither does animal phyſics—and we conſider it much better to introduce a new term, than to change, or miſapply old ones. Long before we adopted this term, we uſed phyſiology in a ſane, morbid, and curative meaning, when reaſoning on the nature of life, &c. As for the terms of pathology, to expreſs the diſeaſed ſtate, together with the ſubdiviſions of it into ſemeiology, for the doctrine of the ſymptoms, and of noſology for the names, and diviſion of diſeaſes—we have no objections to them, if they are kept within their proper limits; neither have we to therapeutics, for the curative indications. But we confeſs, that we believe theſe terms are uſed too much in the antiquated, ſcholaſtic manner, to be applicable to inveſtigation in the preſent times.

The reaſons of our objections to them are founded on this conſideration, becauſe they have been commonly conſidered too much as ſeparate ſubjects of purſuit, unconnected and independant of one another; whereas, in reality they all depend on phyſiology, as much as this does on anatomy. For without an accurate acquaintance with phyſiology, there is not one principle, or mode of action can be either learned, or underſtood, of all that belongs to the human body, in a diſeaſed ſtate, any more than they can in a ſtate of health. For inſtance, ſuppoſe we were to attempt to inveſtigate any one principle, or law of human life; we cannot reaſon on theſe ſubjects, *a priori*, any more than we can on any other ſubject of natural philoſophy. We muſt therefore, have recourſe, either to obſervations, or experiments, for the operations of nature are beſt learned, when ſhe is put out of her uniform courſe; and when it is in this ſtate, they cannot with any propriety, be named the healthy actions, although they are ſtill the phyſical operations, a little deranged; and a more comprehenſive term is obviouſly requiſite to expreſs them by. Suppoſe we were to take that moſt extenſively uſeful, although perhaps leaſt underſtood of all the principles of human life—irritability. It is very evident, that we will underſtand very little of it, by conſidering the healthy actions alone; but by tracing it through all its varieties of actions, in a ſane and morbid ſtate, by obſerving its properties, and from them collecting its more invariable modes, which may be diſtinguiſhed by the appellation of laws; we experimentally acquire a ſenſible, and intellectual knowledge of this principle. In the ſame manner, we muſt trace ſenſibility, vital energy, and inherent ſtrength, or any other of our vital principles, or properties. The importance of theſe purſuits may be demonſtrated thus: Turn to which branch of medical philoſophy we will, we ſhall always find the ſubject of phyſianthropy neceſſary in the purſuit; the operations of medicines are to be learned from this alone; for however uncommon the idea may be, it may be found in Hoffman's large work, that medicines contain no inherent principles of action in themſelves. They do not act on the dead body, ſays Hippocrates; and their actions on the living body, depends on the ſtate in which they find it, whether torpid, or irritable, ſtrong, or weak, &c. It is the ſame with all the parts of regimen, as food, and drink, air or exerciſe, &c.

When we wiſh to conſider the nature of any affection of the human body, whether of a ſpecific diſeaſe, or ſymptom, or their cauſes, or modes of action; we muſt immediately have recourſe to the phyſical actions of the body, in order, even to ſorm ideas of them; and unleſs we have ſome object to direct our purſuits, ſuch as may ſerve to collect the diſperſed rays of information to a point, from which they may be again diſperſed, and mutually applied; to collect a multitude of facts, unleſs ſo directed, muſt cauſe confuſion.

The collection and preparation of medicinal ſubſtances, whether animal, vegetable, or mineral, is altogether independant of this ſcience; and ſo is it alſo of them, only when they are applied to the body; they explain ſome of the vital actions of vegetables, but not a general and particular knowledge, of the phyſical nature of life, and its different ſtates, or temperaments, &c. and the nature, and varieties of diſeaſes. It is certainly very neceſſary for a phyſician, to be able to know, and to diſtinguiſh medicinal ſubſtances; and alſo to be capable of preparing them occaſionally; but one may have all the knowledge, that ever was acquired of their chymical properties, as ſome apothecaries have, without being in any meaſure acquainted with their phyſical operations on the human body.—Here then, are ſeparate purſuits, and the boundaries are diſtinctly limited, between the auxiliary, and the immediately neceſſary, and univerſally applicable parts of medical ſcience.

When we enter into the inveſtigation of the cauſes of diſeaſes, although a knowledge of the external agents are neceſſary, yet we ſhall find the internal ſtate of the body, by far the moſt important conſideration; for beſides that, the greateſt part of diſeaſes are to be traced to the different ſtates of human bodies; even thoſe which are from without, are very much modified by the ſtates in which thoſe perſons are, in whom the morbid actions are produced. Beſides there are many perſons of ſuch peculiarities of habits, as to eſcape every diſeaſe, however general, or violent: unleſs old age, and ſurgical diſeaſes, or accidents. The proper manner of diſtinguiſhing diſeaſes, by their phenomena, or ſymptoms, and that of arranging them according to their genera, ſpecies and varieties, is only to be accompliſhed by attending to their general and particular natures and cauſes, and even in ſome inſtances by their methods of cure, &c.

It is our wiſh, when on this ſubject, to collect all the ſenſible, and rational information, which we can procure from obſervations, and experiments; but at the ſame time, to exclude all merely ſpeculative opinions, becauſe they cannot poſſibly lead us to any uſeful diſcoveries, but may carry us unawares, into pernicious practices; but the great difficulty here, lies in drawing the line of ſeparation, between theſe different modes of purſuit.

As an inſtance of one of the moſt notorious pieces of ſpeculation, which has appeared of late years, or that probably ever did, in the annals of medicine; we may mention the well known Brunonian hypotheſis, and all the adherents to that romantic production, muſt inevitably come under the ſame denomination. By ſubſtituting new terms, for well known ones, and endeavoring to reduce all the natural functions of the human body, to one property, it carries with it an air of novelty, and ingenuity. Aſclepiades vainly boaſted, of reducing the ſtudy of medicine, to a courſe of ſix months; but this would reduce it to leſs than as many weeks; ſo that it muſt be peculiarly agreeable to ſtudents; for here are no laborious inveſtigations of facts. But like the Ancient Grecians, in their phyſics, who found it eaſier to form worlds in imagination, than to inveſtigate, or analize the ſmalleſt part of that in which they lived. But we hope there are very few who have any experimental, and rational knowledge of human phyſics, who will not readily perceive the futility of ſuch whimſical pretentions, yet as we cannot expect that all readers are of this deſcription, it is much to be feared, that there are ſtill great numbers led aſtray by ſuch falſe lights, (ignis fatui.)

Brown, Stahl, &c. deſcribe human life, as it might have been, but certainly not as it is—they no doubt, repreſent it as they imagined it to be; but unfortunately neither of them ever inveſtigated the cauſes or nature of the functions of any one part of it, either by phyſicial experiments, or otherwiſe. But it would be fooliſh to expect of them, what they never learned themſelves, and from what a few weeks could communicate. But theſe experimental improvers of medical ſcience, of which we are now to take notice, proceeded in very different modes: from a long, and diligent attention to experience, they advanced in improvement, by a ſlow but certain progreſs. But ſpeculators, inſtead of thus walking would fly, before they have learned to creep; we ſhall endeavor as we proceed, to detect the bad effects, of being led away by ſuch Ignis fatui; we are ſorry to be obliged in this place, to take notice of this flimſy romance; but its preſent popularity merits attention. In the preſent undertaking, we chiefly wiſh to confine ourſelves to irritability, and its properties, ſympathies, vital energies, and the other principles connected therewith.

Dr. Francis Gliſſon, was the firſt among the moders, who paid any attention, to this vital property, both in his treatiſe on the viſcera of the lower belly, and in that on the liver, he is the firſt medical writer, in whoſe works we find mention made of irritability, which he ſaid reſided in a mucus. He defines it to be that property, by which parts can be excited to action, by irritation; he thought the preſence of the blood, and of animal heat, were neceſſary to its perfection. Without this principle, he could not form any rational idea, of the actions of the firſt paſſages, nor of the veſſels of the liver.

He pointed out the difference between it and (innate,) or inherent ſtrength, which is common to dead, as well as to living matter, and obſerved that ſome parts were naturally more irritable then others, as the inteſtines, ſtomach, the (ſphincter)or circular muſcles, and the heart, this vital power, he named influent; to diſtinguiſh it from the inherent ſtrength, it being different in quantity, at different times: when deficient, langor and depreſſion of ſpirits follow, if totally obſtructed, palſy or torpor, and the profuſe waſte of it, cauſes erethiſm, fevers, and deranges the functions of life, both voluntary and involuntary; ſo that they are either performed difficultly, or not at all, as in accidents, paſſions, &c.

Robuſt men have much inherent ſtrength, children, and delicate women, have weak ſoft fibres, the influent, or vital ſtrength, he believed to be derived from the blood, becauſe it ſo ſoon becomes leſſened, from want of food, or when the blood is vitiated in quality, as in the ſcurvy, &c. the principle of nervous energy, or voluntary motion, he knew was derived from the brain, through the nerves; becauſe when they are intercepted by preſſure, or diviſion, the parts which they ſupply, become paralytick, and waſte. If the moving ſolids are deprived of their irritability, they would remain in an inactive ſtate, but their actions demonſtrate its exiſtence, he did not clearly underſtand any difference between ſenſibility, and irritability, but uſes the old diſtinction of animal, vital, and natural functions, a diviſion as unmeaning as nonnaturals, for every function muſt certainly be all of them, at the ſame time, whether they are produced by ſenſation, or irritation. Many parts are endowed with principles of action, which they ſeldom exert; but thoſe parts which ſerve for digeſtion, reſpiration, and circulation, are conſtantly in motion, whilſt in health: but the inſtruments of voluntary motion, only act when we pleaſe. He was not able to form an idea, how the functions could be performed unperceived, or involuntarily unleſs he thought by this means, the fluids were propelled in their veſſels, by plenitude, acrimony, and nervous rigor, as in hyſtericks; although he ſays the heart is kept in motion, by the influx of the blood into its ventricles, which cauſes the pulſations, without our perceiving them. And the other functions are all performed imperceptibly. As the motions of ſome animals after their heads are cut off, and of the heart, even when ſeparated from the body, and the inteſtines, after they are expoſed to view, for whilſt warm, they are ſeen to twiſt and move, and many other muſcular fibres, when pricked; or touched with any acid fluids, and the contraction of the muſcles of dead amimals by cold; (this would to us appear to be more, owing to elaſticity, or inherent ſtrength, than to irritability) and the contractions of the heart, and inteſtines, &c. when ſeparated from the body was, he thought, a proof that their fibres had perception in themſelves. Here he confounds irritability, with ſenſibility, with the remark that there can be nothing in the intellect, but what we receive by the ſenſes; but here, it is certainly perceptible to the ſight.

He remarked the motions of the membranes of the brain, and ſuppoſed that by them, the vital energy was propelled along the nerves; and that perception was returned by them, to the brain, by means of a nervous medulla (or marrow) derived from the brain; and the animal ſpirits, the agent of muſcular, and other vital motions. He believed that every part of the body, which is changeable by diſeaſe, was irritable, and depended on a vital influx; even the bones, blood, humours of the eyes, and fat, although they are not ſenſible. He alſo obſerves the inherent properties, and the difference between them, and external impreſſions, as cauſes of diſeaſes. He next takes notices of what he names ſecondary irritations, or ſympathies, which he exemplifies by ſtriking the breaſt with one hand, and endeavouring to move the other up and down; and irritating the fauces with a feather, which promotes vomiting; or vomiting at the ſight of another vomiting. Laughter from tickling, &c. and by the ſtomach ſympathiſing with the inteſtines, in choleras or cholics; all of which either palſy or mortification prevents. In the cholic the urine is often obſtructed by the ſympathy of the ſphincter muſcle of the bladder with the inteſtines. Alſo taſtes and ſmells, and applications to the ſkin affects the ſtomach and inteſtines; and a ſtone in the bladder, often cauſes cholicky pains, and ſo does a ſtone in the kidnies, often cauſe vomiting and excruciating pains. The criſis in the fevers, he ſuppoſed was cauſed by ſympathy; alſo obſtructions of the biliary ducts, cauſes cholics, &c. Irritability may either be redundant or deficient, or in a medium between the two—this laſt ſtate is healthy, the others are diſeaſed. The exceſs of irritability, he names pruriency, or what we mean by erethiſm. The defect of it is torpor, (but this is rather the defect of ſtimuli) and may be cauſed by a cold temperament, by opiates or poiſons. The cauſes of its exceſs are weakneſs, acrimony of the blood, &c.

The next in courſe of time, who paid any conſiderable attention to this vital principle, was Baglivi: but although he does not recognize it, by the name of irritability, he has traced its practical properties, more diligently than any who preceded him—particularly in his work on the motions and diſeaſes of the fibres, *(de fibra motrice et morboſa.)* He alſo has paid great attention to the ſympathies, their operations, and the means of directing and managing them to the beſt purpoſes, in the cure of diſeaſes. He traces the doctrines of the animal motions down from Hippocrates, to his own time, which was one hundred years ago: for this father of medical writing had obſerved an *(impetus faciens,)* or what he called *(to arche)* or the firſt mover, whoſe operations were often obſerved by him, both in their modes of action in diſeaſes, and in their methods of cure. Hence the advantages he often experienced from baths, hot and cold, from frictions, epiſpaſticks, cauteries, &c. of which he made ſo much uſe; and alſo entertained more juſt ideas of, than many of his ſucceſſors, eſpecially after the times of Galen, who by his ſpeculations, involved all medical ſcience with Platonic ideas, in a chaos of ſophiſtry, and hypothetical abſurdities; in which ſtate it remained, until the times when experimental ſcience began to flouriſh—when it was liberated alſo from the no leſs whimſical ſpeculations of the ſcholaſtics. And from thoſe of Galen, and the Arabs, &c. The great attention which was paid to anatomy, within the laſt three centuries, firſt taught men to think juſtly, together with the improvements in experimental philoſophy. Baglivi, though none of the firſt, was one of the moſt diligent, and ſucceſsful revivers of the Hippocratic doctrine—paying cloſe attention to the phyſical operations of cauſes and effects, in the knowledge and cures of diſeaſes. It is ſaid of him, that he committed the writings of Hippocrates to memory; and thoſe who peruſe the writings of both, will have little reaſon to doubt this. By his cloſe attention to the motions of the moving ſolids, and to the manner in which they are affected by the vital principle, and the means which he deviſed in order to diſcover the vital motions.

But Baglivi's opinion of motions beginning in the *dura mater*, we cannot ſupport, nor is it neceſſary to his other doctrines; but the ſtrength and elaſticity of the ſolids, and their moving powers, their oſcilations, &c. and the means by which they may be ſtrengthened by nouriſhing food, and country exerciſes, are as important now as ever; but the criſpatures of the fibres we reject, as it is evident he meant irritations which were relieved by warm bathing, emolients, &c. The worm like (periſtaltic) motions of the inteſtines, and the contractions of the ſphincter muſcles, and of the heart, he calls a contractile niſus; and the force by which it is performed, energy. Harvey had before Gliſſon, named the contractile force of the heart, autopſia. Baglivi ſuppoſes there were oſcillatory motions, propagated from the *dura mater*, along the membranes. He mentions irritations, and their effects, although he does not uſe the term irritability; but this term has of late been uſed, in a ſenſe too diffuſe and undefined. The great power which the ſolids poſſeſs over the fluids, when they are irritated by any ſtimuli applied to them, as in the manner whereby ſymptomatic fevers are cauſed, and alſo in children, when their teeth are cutting their way through the gums, &c. they cauſe fevers, diſeaſes of the bowels, &c. and very frequently, even convulſions; and alſo in grown people, ſplinters, bruiſes, or wounds, cauſe ſymptomatic fevers, &c. In a wound of the head, ſtimuli applied to the brain, produced no contractions; but applied to the *dura mater*, they cauſed violent convulſions—(This may be true, although it contradicts Haller, if the ſtimuli was applied ſome time after the wound was inflicted; for in a diſeaſed ſtate, membranes, ligaments, &c. become acutely ſenſible, although they are not ſo always; and the ſenſibility of many parts is increaſed by diſeaſe.)

When the liver, or ſpleen, are obſtructed, or ſcirrhous, a perſpiration can ſcarcely be promoted in diſeaſes, becauſe of the conſent of the ſtomach, and of the ſkin through it. Inflammations in the other viſcera, act in a ſimilar manner, ſometimes on the kidnies, preventing the ſecretion of urine, which opiates ſometimes relieves. The pleura being irritated or inflamed, cauſes feveriſhneſs: ſevere pains of the joints cauſes coſtiveneſs; and the paſſage of calculi from the kidnies, or gall-bladder, cauſes feveriſhneſs and ſtrictures, which are relieved by warm baths, opiates, and laxatives. The epilepſy contracts the voluntary muſcles, and relaxes the involuntary; and frights and hyſteric affections, prevent the catamenical evacuations; but they are reſtored by fomentations, warm baths, injections, and anodynes: and ſo alſo are obſtinate pains of the bowels, &c.

The exceſſive irritation of violent emetics, ſometimes cauſes ſpaſmodiac affections in the ſtomach.

Baglivi has alſo collected much uſeful information, concerning the ſympathies of parts with one another. This he thinks is often cauſed by membraneous connexions, and alſo by a ſimilarity of ſtructure in the parts, or a ſimilarity of uſes, or vicinity, &c. cauſes ſympathies: The head conſents with the belly, (abdomen) and *vice verſa*, when the bowels are opened, the head is relieved. The breaſt ſympathizes with the genitals, and they with the breaſt; ſo that diſeaſes of the breaſt are readily relieved by dieuretics. The conſent between the firſt paſſages and the ſkin, is very evident; for a perſpiration relieves the diſeaſes of the inteſtines, and purgatives often cure the diſeaſes of the ſkin. Diſeaſes of the liver cauſe a dry cough, and difficulty of breathing, and often a dropſy; and bleeding of the noſe accompanies a ſwelled ſpleen. The biliary ducts ſympathize with the firſt paſſages, and they with the ſkin; hence the bilious vomitings which ſucceed the rigors of fevers. The urinary parts are affected by ſympathy with the fundament; and the firſt paſſages by the kidnies. The liver and gall-bladder conſtantly ſympathize. Vertiginous and ſpaſmodiac affections, paſs ſo quickly from the ſtomach and other parts, to the head, that they were often believed to be propagated by vapours. —Smoaking of tobacco, ſometimes excites the motions of the inteſtines—ſo alſo does ſnuffing. In calculous, or gravelly affections, there is an itching of the glans penis. In the rigors of fevers, any warm application to the pit of the ſtomach, or the ſoles of the feet, are apt to relieve, or cure them. Standing on a cold pavement, or otherwiſe cooling the feet, cauſes pains of the bowels, laxes, and head-aches, which warm bathing of the feet will relieve, In injuries of the brain or its membranes, an inflammation of the eyes is mortal, if it happens from the ſeventh to the twelfth day. Injuries of the brain, cauſe nauſea, vomiting, and ſometimes ſuppurations of the liver. Cold applications to diſtant parts, often ſtops bleedings at the noſe; ſo alſo does ſudden fear, &c. Joy or anger promotes the catamenia; but grief or fear ſtops it. Modeſty cauſes difficult parturition, and often ſtops the flow of the lochia, or floodings.

Thoſe obſtructions of the meſſentery, which are often the conſequences of fevers, are beſt removed by gentle ſtimulants, (ſuch as ſmall doſes of mercurials and laxatives.) The conſent between different parts of the body, and the heart, arteries and veins, is very remarkable in fevers; and alſo by affections of the mind, &c. The body may be accommodated to different habits by uſe—much exerciſe increaſes the ſtrength, and idleneſs, or ſedentary employments weaken us. Cuſtomary times of eating, ſleeping, &c. may be changed, although they would, if left to themſelves, keep to their own times. A bleeding at the noſe in young men, and a lax in old men, relieves fevers. Many phenomena takes place in the human body, which neither mechanical, chemical, or even anatomical inveſtigation can ever explain.

The conſideration of ſtrength and weakneſs, he alſo thought of great importance. Children and old perſons, are both expoſed to affections of the bowels; although their real ſtates are ſo very different; for in children, there is an over great ſuſceptibility of impreſſions, or an over degree of ſenſibility, and irritability: but in old age theſe are defective, and the parts turn callous, &c. ſo that theſe are more ſubject to paralytic, but the young to convulſive diſeaſes; and both are ſubject to cattarrhs, indigeſtion, mucous excretions, &c. which are remedied by ſtimulants and ſtrengtheners. The watery eyes, cauſed by a relaxation of the glands, &c. are cured by aſtringents and ſtimulants. The diabetes is often cauſed, and alſo cured in the ſame manner; and alſo, ſuppreſſions of urine from a parallyſis of the kidnies, or of the bladder. He recommends exerciſe, as walking, riding, dancing, ſinging, reading aloud, hunting, ſailing, &c. for obſtructions of the meſſentery and weakneſs. In obſtinate cholics, daily riding on horſeback, &c. cures them. In the eryſipelatoſe inflammations of the viſcera, which take place in fevers, there is a coldneſs of the extremities—the interior part of the ſtomach being irritated by acrimony of various ſpecies, ſuppreſſes the perſpiration ſuddenly, and relieving the ſtomach renews it. Inflammations of the viſcera alſo ſtops the perſpiration; but by reſolving the inflammations, the perſpiration is renewed. The pulſe is apt to be ſmall in inflammations of the inteſtines, and parts adjacent. Many, he ſays, praiſe Hippocrates and Archimedes; but few read, and ſtill fewer underſtand them—as ſcarce one in ſix hundred: he exhorts to the diligent peruſal of his writings. A few medicines well directed, are the beſt demonſtration of the abilities of the phyſician.

We have given this collection, and tranſlation of theſe few ſentences, as a part of the information to be collected from Baglivi, and as a ſmall tribute to the memory of one of the beſt of medical writers. We ſhould not deſpiſe theſe obſervations, merely becauſe they are old—ſome of them having kept their credit for 2200 years, and all of them upwards of 100, for inſignificant novelties.

The name of Haller is conſpicuous in phyſiology. This diſciple of Boerhaave, was one of the firſt who inſtituted a ſeries of experiments, in order to determine the difference of ſenſibility and irritability, and other parts of phyſiology; and to inveſtigate their properties and laws; and his experiments led him to believe, that ſenſibility was a property of the nerves alone, and that irritability was a property of the muſcular fibres only. He found many parts inſenſible when recently wounded, ſuch as the tendons, ligaments, and membranes, the membranes of the brain, *(dura and pia mater)* and the perioſteum of the bones, &c. which both before and ſince, had been found extremely ſenſible, when in a diſeaſed ſtate. He concluded from his experiments, that they were always inſenſible, and this led him into many diſputes with the medical practitioners of his time, relative to this part of his diſcoveries—both appealing to experience; but as it happened, they were both right, with reſpect to the reſult of their own experiments, but wrong with reſpect to their opponents; for the practitioners would not allow, that theſe parts were inſenſible in recent wounds, which Haller had found them to be ſo, neither did they know it; for it has been diſcovered ſince, and the conteſt ſettled by farther inveſtigations.

The application of this doctrine to practice, we have very lately found of uſe, in the inveſtigation of the cauſes, and mode of operation of the tetanus, which we are convinced is altogether a diſeaſe of the ligaments, which by a continued courſe of irritation, becomes both highly ſenſible and irritable; as in the various appearances of this affection, we ſhall find all the large ligaments of the body, and them alone affected. Firſt the ligaments of the under jaw—ſecondly, the great dorſal ligament; the firſt ſhutting the jaws—the ſecond drawing the head backwards, or to one ſide, and bending the whole upper part of the body. The ligaments under the breaſt bone, cauſing pain there, and thoſe of every joint of the body, all through which, the twitches fly, with the ſpeed of electric fire. It is alſo probable, that membranes, tendons, &c, are affected in this diſeaſe, from ſome ſimilarity in their natures and offices.

Haller begins his experiments with the tendons, to which he, and others applied both chymical and mechanical ſtimuli, without producing any motions in their muſcles, or any ſenſations, in the animals ſubmitted to theſe experiments. Even in wounds in human ſubjects, they did not ſoon become irritable. In the perioſteum he could find no ſenſibility on cutting, tearing or burning, &c. In the paricranium, it was more doubtful; in three caſes the animals appeared to feel it, and in as many others, and in ſome men, they diſcover no uneaſineſs; the capſulæ of the joints of goats and dogs, being opened, and burned, parched, &c. eaſily healed. A number of experiments, both by himſelf, and his friends determined him to conclude the dura mater, to be inſenſible in trepanning, &c. and even the pia mater, which gives a covering to each of the nerves, appears itſelf to be inſenſible; for in the organs of ſenſe it is caſt off, and when ſeparated from the brain, it is not ſenſible.

The medullary part of the brain, appeared to be the vehicle of ſenſation, and the principle of motion; the cortex may be wounded without being felt; but it ſometimes cauſes ſlight convulſions, but in the medulla they produce pains, convulſions, &c. but the vital motions, are performed for ſome time after. The ſpinal marrow alſo, ſerves for a vehicle of motion, to the nerves ariſing from it, and wounds of its upper parts are mortal. The pleura alſo, and peritoneum, were found inſenſible, alſo the pericardium. The lungs, liver, and kidnies, ſhewed no ſenſation, on being irritated; neither did the venna porta, or celiac artery, irritating the cocliac plexus, which joins theſe together, cauſed ſome uneaſineſs; this explains the reaſon why the lungs, liver, or kidnies, may be ulcerated, without cauſing much uneaſineſs. Ligatures on the nerves, deſtroys both ſenſation and motion in the parts to which they belong. Much pain, and even convulſions may be avoided, by leaving out the nerves in ligatures of the arteries, in ſurgical operations, &c. Opium allays the ſenſation; but a ſucculent nerve will cauſe motion, for ſome time after being ſeparated from the brain; wherever its branches are ramified, not by oſcillations, &c. for they produce no motion, without muſcular fibres; ſo that they cannot act as cords to the arteries and veins, or to the exhalents, or inhalents, &c. they are not the inſtruments, but the vehicles of the principle of motion.—It appears that ſenſibility, is different from irritability, for a nerve may be cut, or tied, and the irritability remain; there are three varieties of contractibility, the inherent, which remains ſome days after death; this is ſimilar to elaſticity; the ſecond is irritability, which may be produced in animals deſtitute of brain, or nerves—this is by external impreſſions, independant of the nerves. The third is the nervous energy, or influence, this is governed by the will, or by pain, and is much ſtronger than the others. The iris of the eye is inſenſible, but very irritable, it is altogether governed by the impreſſions on the optic nerves, their medullary part being ſpread on the retina, and changes with it. It is a good index of the ſtate of the brain, and nerves. The arteries of cold blooded animals, have no contractibility; thoſe of the warm blooded animals contain a little, he thinks, becauſe they contain ſome muſcular fibres, the ſtrong chymical ſtimulants prove nothing, as they deſtroy the parts; but they cauſe contractions ſome days after death. But the mechanical are proper, and they ſeldom cauſe contractions; the veins were more irritable. The chyliferous ducts, and lacteals, are very contractible by chymical ſtimuli. The gall bladder, and biliary ducts, are ſlowly contractible by ſtimuli, or even by biliary calculi; the urinary bladder is ſtill more contractible, even by mechanical ſtimuli, eſpecially when full, the ureters are but ſlowly contractible; the fallopian tubes have a periſtaltic motion, and are as irritable as the inteſtines, which he thinks propels the ovum into the uterus. The irritability of the ſtomach, would appear to depend on its muſcular fibres, as in vomiting, &c. it appears to be leſs ſenſible than the ſkin; when irritated, it is contracted, and its ends are drawn together. The gullet (eſophagus) has ſomething like a periſtalic motion, but the midriff (diaphragm) ſhuts it on inſpiration, it is highly irritable.

The inteſtines contract ſo as to obliterate their cavities, and ſometimes obſtruct their paſſage, their motion is ſcarce ever abſent during life, and for ſome time after; and may be obſerved through the peritoneum, purgatives increaſe it, &c. the ſtraight inteſtine is very irritable, but obtuſely ſenſible—the inteſtines are more tenacious of motion, than the muſcles, but the heart is ſtill more ſo. But in hot blooded animals, it is ſoon deſtroyed by cold. Irritation of the membrane inſide of the wind pipe, cauſed no coughing; wherefore the motions of the heart, inteſtines, ſtomach, &c. are involuntary. Thoſe contractions which are cauſed by the concentrated mineral acids, and cauſtics, in the veins, arteries, gall bladder, are not fair demonſtrations of irritability; for they corrode all the ſoft parts, &c. and mechanical ſtimuli, cauſes no contractions in theſe parts, nor in the ureters; but the fuming nitrous acid, or acid of vitriol, irritates the veins, arteries, tendons, or nerves. Theſe he ſays, are not irritable in living animals. The ſkin may anſwer as a ſcale to meaſure ſenſation; parts which cauſe pain, when irritated are ſenſible; theſe which do not, are inſenſible, the fat and cellular ſubſtance are inſenſible; all muſcular fibres are ſenſible, particularly the hollow ones, as the ſtomach, inteſtines, bladder of urine, but the tendons are inſenſible, and alſo the ligaments, perioſteum, &c. By his experiments, the bones were found to be inſenſible in amputations; but he mentions the tooth-ache, as an exception, and ſo he ſhould diſeaſed bones—and he denies the motion of the dura mater, for it has not room to move; the heart is obtuſely ſenſible, but it is irritated by diſtention, the ſenſation of the glands is obtuſe, the tongue, the eyes, and penis, are acutely ſenſible—the medulary parts of the nerves alone, and thoſe parts to which they are diſtributed, are ſenſible; but not their membraneous coverings.

We come next to irritability, which is, he ſays, independant of ſenſibility, *et vice verſa*, for the nerves themſelves are not irritable—muſcles being irritated, their nerves do not move; he denies that the ſkin, or the nervous membranes of the ſtomach, inteſtines, or urethra, are irritable, although theſe parts are acutely ſenſible—parts ſeparated from the body, can be irritated, either by means of their nerves, or by ſtimuli. Tendons are neither ſenſible, nor irritable, neither are the ligaments, perioſteum, membranes, &c. the ramifications of the arteries are irritable, although their large trunks are not—although opium deſtroys the irritability of the inteſtines; it does not appear to affect the heart; but when the inteſtines are irritated, they contract, and form interſuſceptions; diſtention, either by air or water, cauſes contractions in the heart, without leſſening its irritability, when ſtimuli fail: they will commonly move until night, but ſeldom the next day. Diſtention appears to be the prinpal cauſe of the hearts motion; this is a diſcovery of R. Hooke, much of this property appears to reſide in the mucus, which is ſo abundant in the interior ſurface of the inteſtines, and urethra, ſo that when wiped off, they will bleed; it is ſtrongeſt in thoſe parts which are moſt neceſſary to life, as the heart, inteſtines, diaphragm, &c. when parts are dry, they loſe their irritability. This is different from every other property of matter, elaſticity has nothing to do with it; ſoft gelatinous animals, appear to be the moſt irritable, particularly pollypii, &c. which perceives light without any eyes, but theſe animals are not elaſtic—children are more irritable, than the aged. Hence it appears to belong to the gluten, of which the young contain moſt; irritability is totally independant of the mind, or will, it appears to be owing to the ſtructure of the parts, and can be demonſtrated by its effects only, cold and dryneſs ſtops the ſpontaneous motions. F. Gliſſon, thought it depended on perception—the muſcles being ſtimulated, accelerates the motion of the blood: hence inflammations, &c. as L. Bellini thought, but G. Baglivi, came nearer to the truth, than any other, by experiments, he had ſeen the heart ſeparated from the body, and cut into ſeparate pieces, each of which contained the principle of motion, without any nerves; and muſcles contract, without volition. Stahl, and his followers, ſuppoſed contraction to be innate, and influenced by the ſoul, which ſet them into action, (this is reaſoning from metaphyſics, to phyſics, it is like laying a foundation on the clouds.) Boerhaave had ſeen the motions of the ſeparated heart, by ſtimuli, but ſuppoſed they were cauſed by nervous influence. J. Woodward, and A. Stuart, made ſome experiments on irritability, and muſcular motion. Animal fibres contract when irritated; the vital organs are conſtantly irritated, therefore, they continue their motions. De Gorter, wrote on ſenſibility, to the ſame purpoſe. F. Winter, traced all human motions, to fibrous irritability, and ſtimuli—and ſo did Kauw Boerhaave, on the moving power of animals. R. Whytt, allowed that irritation was neceſſary to produce motion; but that there muſt be perception. Zimmerman and Oedeurs, demonſtrated it by experiments, to be as general in animal fibres, as attraction in the univerſe. Irritability is ſeparate from the mind, and the ſoul.

Dr. Kirkland believes, that the nerves convey the medullary ſubſtance of the brain, to the muſcular fibres, and other parts of the body, which is ſpread like a mucus, after the nerves have depoſited their coats, as in the eyes, ears and noſe; by depriving any part of this mucus, it loſes its irritability. Whytt called this a ſentient principle, and Haller, thought the organization of the parts had a great ſhare in rendering them either irritable, or ſenſible.

The medullary part of the brain, and nerves, has every appearance of a mucus, and it appears to be conducted to, and ſpread over every part of the body, for the purpoſes of ſenſe and motion; which it may be the vehicle of, as readily as a fluid is of electricity. Tying, or deſtroying only a part of the nerves, of any part of the body, does not always render it paralytic, for other nerves may ſupply it. Even the point of a needle, will cauſe irritations all around it, which ſhews a conſent of parts, by means of this mucus; for all the nerves in the body, not being enough to form a cord of an inch in diameter, and going in the ſtraighteſt poſſible lines, to the places of their deſtinations, could not have points terminating ſo cloſe together, as to cover every point of the ſkin. The motions in the fibres of ſlaughtered animals, when laid bare, are cauſed by irritation; but it ceaſes by rubbing off the mucus, or by drying, or cooling it. Cold blooded animals retain their irritability longer; as ſnakes, eels, and the amphibious animals; as aligators, turtles, frogs, &c. he could not be convinced, that any part could be irritable, without being ſenſible, although he acknowledged irritability in the parts of dead animals. But Haller, found ſome of the leaſt ſenſible parts the moſt irritable, and vice verſa, he ſuppoſes the nervous fluid as neceſſary to life, as the blood; wounds of the gray or cortical part of the brain, are not mortal but thoſe of the white, or medullary part are. Thus a part may be irritable, without the ſtimuli producing viſible contractions, as the ſkin is irritated by bliſters, although it does not contract, and by any ſtimuli, or irritation the glands increaſe their ſecretions, and ſo do the mucus membranes which line cavities, as that of the noſe, from the taking of ſnuff, or of the mouth, from acrid ſubſtances; every ſenſible part, appears to be irritable, but every irritable part is not ſenſible. There are great varieties of irritability, according to the ſtate of the parts, and of the patient, it may be either healthy, or diſeaſed, from defect or abundance of it. Children appear to have moſt of it, for the motions of their hearts are very quick, and the ſkins of ſome delicate people, are inflamed by mild ointments, ſo that irritability appears to be varied by ſtructure, and may therefore be infinite in its varieties, and the ſame may be ſaid of diſeaſes, as the ſmall pox, hectic fevers, &c. as they all appear to act on the ſolids: ſo that true inflammation, eryſipelas, or ſpaſm, may be cauſed by the ſame irritation, in different conſtitutions, but there are ſome difference, between the irritability cauſed by diſeaſe, and that from ſtructure.

The firſt paſſages (ſtomach and inteſtines) appear to be the centre of ſympathy, between the different parts of the body, as we may obſerve in intermittents, and nervous diſeaſes, the ſympathy is reciprocal. In hypochondriacal and gouty patients, the ſenſibility is ſo accute as to render life uncomfortable; one patient was thrown into convulſions, by hearing the chiping of bricks; and when he died his liver was found to be very ſmall, flabby, and of an aſh colour, here the liver was the ſeat of the diſeaſe.

True, or phlogiſtic inflammation, which takes place in the robuſt and young, is very different from the ſpurious, (erythematic) inflammation of the weak, and aged, a man of fifty years of age, pricked his finger with a fiſh bone, which was followed by inflammation, matter formed and was abſorbed, from whence a diarrhea came on, and carried him off in two days—we have ſeen the moſt violent erythematic inflammation, extend up the arm to the ſhoulder, in an old ſeaman, from a prick of a needle in the fore finger, in which inſenſibility, bliſters and a livid colour, ſhewed that a gangrene had taken place, and this perſons life, and his arm was ſaved, by poulticeing and fomenting twice a day; and taking four quarts of port wine, and ſix ounces of bark, in the courſe of four days, together with three grains of opium each day, ſee the caſes, but we believe they are ſeldom ſo ſucceſsfully treated as this was: had this man been bled, and purged, he certainly would have died; neither could he have borne the loſs of his arm; this and ſome ſimilar caſes, ſets the neceſſity of attending to the ſtate of the patient, in a clear point of view, for a decreaſe of ſtrength, increaſes morbid irritability.

The child bed fever, and hyſteric ſymptoms, may, he ſays, both be preſent at the ſame time, and each require their own mode of treatment, and when in conjunction, they aggravate each other.

The low nervous (or typhous) fever, may be ſubdued by cold air, (or cold water, or opium,) but bark, wine, and cordials are neceſſary, to ſupport the vital energy at the ſame time. When the hydophobia is accompanied with an inflammatory diſpoſition, bleeding will abate it; but the diſeaſe will remain, from the irritability: a lady was ſo irritable, that ſetting her foot awry, or preſſing her hand againſt any hard ſubſtance, cauſed vertigo, (or giddineſs) and her ſkin was ſo irritable, that it could bear neither ointments, nor plaiſters of the mildeſt nature; the vertigo being accidental, was cured by proper medicines, but the ſtate of the ſkin was natural and remained as before. It often happens in remittent viſceral fevers, that after the inflammatory ſtate is removed, an erethiſm remains in the ſkin. Theſe facts ſhew the variety of irritability, and the different means by which it is to be removed: were the varieties of it well characteriſed, much uncertainty in practice would be prevented. In ſome caſes opium cauſes reſt, in others it prevents it, but whenever it fails, camphor generally ſucceeds. We learn to diſtinguiſh diſeaſes, as we do perſons by their faces, by a ſpecies of inſtinctive information, and from this ariſes the importance of practice, for language falls far ſhort of all our ideas: hence the preference which old practitioners often get, to the younger ones. The practice in external, or ſurgical diſeaſes, is the far beſt introduction to the knowledge of the internal, or otherwiſe we may both be ignorant of their ſeats and their natures, the ſymptoms being often but uncertain guides to direct us. The irritability, and nervous energy, may be either increaſed, or diminiſhed, this laſt ſtate is the moſt dangerous in general; by attending to this, we have ſome rules to go by, when there is much irritability, opium is commonly ſucceſsful; but where the ſenſibility, is too accute with weakneſs, camphor is more apt to anſwer, in caſe of great weakneſs the native balſams, as that of Peru, or capivi, and the fetid gums, aſafetida, gallbanum, and the eſſential oils, are apt to ſucceed, as they increaſe the ſtrength. When laudanum is given in ſtrong habits, it ſhould be joined with cooling medicine, or antimonials. Peruvian balſam, or oil of turpentine applied to pale ulcers, often does good, but olive oil anſwers better to irritable, red, and very painful ſores for abating pain; but we cannot be certain, in many caſes, which may anſwer before trial, the diſtinctions are ſo obſcure. It is juſt the ſame in internal diſeaſes, for in hyſteric caſes, camphor, caſtor, valerian, aſſafetida, or Peruvian balſam, anſwer in their turns, and one grain of calomel will ſalivate one perſon, whilſt ten will not affect others, when the liver, ſpleen, &c. are obſtructed, varieties of irritability may appear as hypochondria, mania, hyſteria, or the ague; all different from the hydrophobia, or locked jaw, (tetanus,) the connection of madneſs, and ague; with ſpaſmodiac diſeaſes, is not much known, although really true. Hitherto of general irritability, let us next attend to that which is topical. It is allowed, that inflammations leave parts more irritable, the oftener they occur. Hoffman obſerved, that ſpaſms cauſed weakneſs, and weakneſs cauſed ſpaſms; due attention muſt be paid to this circumſtance, in the uſe of applications.

An ulcer on the leg cauſing frequent eryſipellatous appearances, being dreſſed with red precipitate, and baſilicon when foul, cauſed the moſt violent inflammation, which ſedatives and time relieved. Precipitate being applied to fungous fleſh on the thigh, which had ſucceeded a compound fracture, cauſed violent inflammation, rigors, and hectic, but recovered under milder applications, a perpetual bliſter being applied to a lady's neck, for a pain of her head, the ſore became ſo irritable, as not to heal by the mildeſt ointments, but was cured by applying cloths wet with cold water only. Theſe varieties, alſo extend to the diſeaſes of the interior parts, as the liver, lungs, &c. diſeaſes increaſe their irritability, and the ſame varieties of treatment, are to be accommodated to the varieties of the diſeaſes. When the habit of body has been weakened by mercury, ſuch a ſuſceptibility remains ever after, as to be more readily affected by this mineral: the ſmalleſt quantity of emetic tartar vomits ſome perſons, but others can ſcarcely be made to vomit with it at all, and the ſame with many other medicines. Sympathies owe their origins to irritations propagated along the parts, by means of the nervous mucus to the brain for ſenſation, and to every part of the body by ſympathy, although not perceived by the ſenſes. In this way involuntary affections act, or impreſſions, whether morbid or healthy : it is more probable that ſympathy is communicated in this manner, than along the nerves, or by ganglions. The diffuſed nervous mucus, is much affected in inflamed ſores, or in fevers, the heart conſents with the irritated parts, and beats quicker.

A perſon with an ulcer on his leg, was often attacked with an eryſipelas (St. Anthony's fire) on it, and vomiting, in the forenoons, which was cured by applications to the part, after inward medicines had failed. Another perſon was teaſed with a cough, during the increaſe of an abſceſs on her wriſt, but as ſoon as the matter was let out, the cough ceaſed ; here was a conſent between the wriſt and the lungs. A ſprain of the ancle cauſed pain, and ſtiffneſs of the part, which extended over the whole body, for ſome weeks after. On taking a ſcirrhus out of a woman's breaſt, whoſe habit was very irritable, rigors, fever, and retching, ſupervened : but on preſſing gently on the part, retching would return, and ceaſe on the removal of it alternately—the wound being inflamed, dry and ſhining, a decoction of bark relieved theſe ſymptoms, as ſoon as the matter was formed. Irritation produces either true inflammation, eryſipelas, or ſpaſm, according to the ſtate of the patient, and the part affected ; there are great varieties of all theſe affections, and they are often mixed in the ſame perſon, and at the ſame time, a livid, or purple colour in a ſore, is a bad ſign. Balſams ſhould be applied, with poultices, and bark taken inwardly, for this appearance.

A man aged 40, was attacked with a locked jaw, from a laceration of his heel; opium, bark, and wine failed to give him any relief, together with digeſtives, and poultices to the part, which was of a purple colour; but on applying balſam of Peru, to the ſore, he recovered in about a week.

A young man of a weak and irritable habit, being often ſeized with convulſive affections, for which medicines gave no relief; was cured by taking a drachm of balſam of Peru on ſugar, as often as they returned, and by taking it thrice a day, for a week, with tar water, he was perfectly cured.

Dr. Whytt mentions a caſe of a young woman, who always coughed violently, when ſhe extended her foot, without intermiſſion, ſo long as it was extended, but ceaſed on relaxing it.

An old lady, after a paralytic affection of the left ſide, had an ulcer on the ancle of the ſame leg, which was ſo very ſenſible, that touching it with a rag, cauſed ſpaſms of the breaſt. We often ſee the effects of irritation go as quick as electric fire, from one diſeaſed part, to other ſympathiſing parts; by this means Lac Ammoniac, relieves a nervous cough, as ſoon as it gets into the ſtomach—and laurel water given to a dog, cauſes convulſions. It appears, that by leſſening irritability in a diſeaſed part, it is alſo leſſened all over the body, and by irritating a diſeaſed part, the whole ſyſtem is affected with febrile, or ſpaſmodiac, or inflammatory ſymptoms.

Sir John Hunter, was one of the greateſt experimentaliſts of late years—His works are well known. That on the blood merits a diligent peruſal. In the introduction he writes of actions, ſane and morbid; it muſt be allowed that a greater action, or force overcomes a leſs, for in the animal body, they cannot long remain in equilibrio—therefore no two oppoſite diſeaſes can exiſt long in the conſtitution with equal force at the ſame time, (if they are ſpecifically different, ſhould have been added,) for we know, that diſeaſes with different names, are often preſent at the ſame time, as fevers and fluxes, dropſy and jaundice. But we know that one part, may be more ſuſceptible of any particular diſeaſe than others; but if we except the ſmall-pox, and meaſles, we believe there are very few other ſpecific fevers, which may not be intermixed; but we believe, one predominant mode of action, will overcome all others. The inoculation of the ſmall pox, may be prevented from taking effect, by weakneſs, as well as by other affections. Sympathies are either ſane, or morbid, univerſal or partial—the nervous and hectic fevers, are univerſal, other parts ſympathizing with diſeaſed parts, are only partial ; remote ſympathies are, where there is no connection to be diſcovered, as between a diſeaſed liver, and the ſhoulders, and many others, which are very deluſive—but contiguous ſympathies are more common—mortification may either ſucceed inflammation, or weakneſs, or cold. We believe that inflammation always cauſes increaſed action, and that mortification does not ſucceed, until the violence of the action is over ; and this is the period, in which cordials, bark and wine, and ſtimulants, are advantageouſly applied, to prevent mortifications, ſucceeding active inflammation.

Union of divided parts by the firſt intention, he thinks, is accompliſhed by the coagulating lymph, glueing them together. We believe an inflammation of the ſolids, is alſo neceſſary, whether in bruiſes, or wounds, it is requiſite, that both the blood, and the part ſhould be in a healthy ſtate, previous to the injury. But we cannot conſider the ſprouting of a vegetable, to be in any reſpect ſimilar to the protruſion of puſs, or extraneous ſubſtances, from the interior parts, to the ſurface of the human body.

With all due reſpect to the memory of this perſon, we believe that his diviſions of inflammation, are over complicated, and on that account, not ſo uſeful, as otherwiſe they might have been. And if, inſtead of dividing it into the adheſive, the ſuppurative, and the ulcerative, he had in the firſt place, given accurate diſcriminating rules, to diſtinguiſh the active phlogiſtic, from the eryſipellatos, or the erythematic—they are very neceſſary diviſions, as they require very oppoſite modes of treatment; whereas his diviſions, are generally a conſequence of one another, or only different ſtages of one variety of affection; and the ſcrophulous, and ſchirrous, or cancerous, would appear to be neceſſary diviſions, but my reſpect for this progreſſive work, is too great, for me to attempt any analyſis of it.

He endeavoured to trace the vital principle, even to the blood, as his brother, Dr. William Hunter, had done to the apparently inorganic maſs of callus, which unites broken bones. We believe, that the vital pabulum, and the principle itſelf, may be preſent in the blood, as they apparently were in the latent ſtate, in the eggs, from which he firſt deduced the idea; for in them, it only requires the ſtimulus of heat, to ſet it in action; it is in the ſame ſtate, in the ſeeds of vegetables. The coagulating lymph, is the agent in uniting wounds by the firſt intention, and other inflamed ſurfaces, when in contact, and veſſels being produced from it. He alſo allows of life in the brain, and diffuſed over the whole body, by means of the nerves, whereby every part is ſuſceptible of impreſſions—the coagulating lymph appears to be the part from which nutrition is ſupplied; but we believe there is organization, blood, and nervous medulla, required, and alſo, a certain degree of heat, to produce compleat animal life. The heat appears to excite action in ſuſceptible parts; we conſider it as an agent, not as a part of life.

On muſcular contraction, he ſays the ceſſation of irritation, ſometimes produce contractions, as in the radiated fibres of the iris of the eye, whereas the contracting fibres contract the iris, when there is much light. It might have occurred to him here, that light is not the native ſtimuli of muſcular fibres, and the fibres which contract the iris, act from ſympathy with the retina, and when they are relaxed from the abſence of light; the force of the radi fibres overcomes the others. And we believe, what he calls the ſtimulus of relaxation, in all other ſphincter muſcles, may be accounted for in the ſame manner, from their force being overcome by a greater, unleſs ſo far as the will, or mind, is concerned.

Dr. Munro, in his work on the nerves, ſays, irritability depends more on the arteries, than on the nerves—for a wound in the leg of a frog, was irritable, inflamed and healed, after the nerve was cut aſunder. But when he either tied, or cut the vein, the part could neither be irritated, nor any perceptible ſympathy be produced between it, and other parts of the animal's body. Two of the conditions neceſſary for irritability, in warm blooded animals, are conveyed along the arteries, to wit, heat and moſture. Muſcular fibres alone, are viſibly irritable; but cold or dryneſs deprives them of this vital property. The arteries of the nerves, as that of the optic nerve, he ſays, aſſiſts both in receiving, and conveying impreſſions—we are perſuaded that they are neceſſary, in the organization of all ſenſible, as well as irritable parts. All parts which are irritable, are capable of being affected by ſtimuli; whether inflammation, erethiſm, or ſpaſm, are produced.

The doctor, we obſerve, will not allow of what Gliſſon, and Haller, called (vis inſita) inherent ſtrength, or any other than nervous energy, (vis nervea) or vital energy, which Gliſſon named influent ſtrength—but by inherent ſtrength, we underſtand that, which muſcular, and other parts poſſeſs, both before, and after death. For certainly the parts of a child, are not ſo ſtrong as thoſe of a perſon of mature age; and one perſon is often ſtronger than another, at all times of life, from various cauſes.—Neither does Dr. Munro, allow of irritability, being independent of ſenſation. But we believe, he on ſome occaſions, confounds theſe properties, particularly after having divided a nerve, and on finding that the part which it ſupplied, was irritable; by calling this property ſenſibility, he was under the difficulty of ſaying, that ſenſation was produced without perception, or not giving origin to any ideas.

It might have occurred to him, that many plants are irritable, without either brain, nerves, or ſenſe. We are much pleaſed with his candour, in confeſſing, that the functions of animals, and the phenomena of diſeaſes, are not to be accounted for, wholly, by the moſt accurate diſſections; nor by any mechanical; and he might have added chymical inveſtigations, hitherto diſcovered.—Although he allows, that a quadruple proportion of blood goes to the brain, yet he is doubtful, whether any thing is ſecreted from it, ſo as to be diſtributed by the nerves, to other parts of the body; yet ſtripeing a nerve downward, was long known to produce action in the midriff: whereas ſtripeing it upwards, cauſed no action.

The brain appears to be the ſeat of the mind, and the nerves to be the avenues, by which it is conducted from the organs of ſenſation, in the different parts of the body; and from the brain, volition is carried to all parts, which perform voluntary motions—but motions produced by irritation, are independant of the will, and they are often imperceptible: ſuch as digeſtion, circulation, ſecretion, &c. Hunter on the blood, contains much uſeful, phyſical ſcience, but it is every where to be found.

J. C. Reil, of Halle, in his work on the nerves, ſays, that they are tubes, containing a medullary ſubſtance—Their coats, he ſays, are ſtronger, or weaker, in proportion to the energy of the parts, which they ſupply; the nerves only communicate with one another, by means of their medulla, and their external coats. He thinks every part of a nerve ſecretes, to ſupply the waſte of the medulla, ſometimes independant of the brain; and that they are irritable. Maceration in dilute nitrous acid, (aq. fortis) corrodes the tubular ſubſtance of the nerves, and leaves the medulla of a fine yellow colour—the nerves are well ſupplied with blood veſſels, and are ſubject to inflammation—in typhous fevers, he found them ſo. The arterial blood, he ſuppoſes, co-operates with the nervous medulla, and ſupplies the waſte of it, which takes place, in compoſition, and decompoſition. He thinks, that the functions of the nerves, are not confined to ſenſation, and volition; but that they co-operate in nouriſhing the body, and in the production of animal heat; and as the medium of connection, between all parts of the body, equally neceſſary with the blood veſſels, in the functions of life.

As it is impoſſible, that there are nerves in every part of the body, where ſenſation and motion exiſt: he therefore ſuppoſed, they had a ſphere of action beyond their apparent ſubſtance. Kirkland, and Humbold, are of the ſame opinion, from experiments.

The long diſputed fluid of the nerves, was demonſtrated by the author, in September, 1800, in the body of W. Patterſon, (who died of hepatitis, &c.) whoſe caſe is mentioned. By cutting out a piece of the great nerve of the thigh, and holding it up, and ſeparating the fibrils, with the point of a pair of ſciſſars, whilſt yet warm; each fibril was very ſoon obſerved to have a little knob, of a whiteiſh, or ſubalbid fluid on their points, perceptible enough to the naked eyes of many who were preſent; and by touching, it appeared to be a ſemi pelucid, fluid. This was before we knew of any other demonſtration of it.

In the time of ſleep, the ſenſibility is totally inactive, but the irritability, and the offices performed by it, are as regular as when awake—this ſhews a difference between theſe two properties; all animals require ſleep. But in ſome diſeaſes, which affect the nerves very much, as in mental derangements, the irritation, and action of the nerves, is ſo great, as often to prevent ſleep, for weeks together; but in ſleep the vital ſtrength (or energy) accumulates, but great and conſtant ſtimuli exhauſts it very ſoon. The vital energy alſo accumulates in thoſe animals, which exiſt in a torpid ſtation in the winter.——Whilſt we purſue the ſubject of animal life experimentally, and by obſervations, we may expect to make ſome progreſs--but by ſpeculations, we are either led aſtray, or involved in impenetrable obſcurity. And although the functions of the human body, are conſtantly the ſubjects of experiments; yet this experimental ſcience has been much neglected, while time, and abilities have been loſt in idle ſpeculations.

Irritability has been ſaid to differ from ſenſibility, in the one being increaſed, and the other leſſened by repetition. But it would be more properly ſtated thus: impreſſions which produce actions, are increaſed in their power, by repetition; but where the impreſſion does not produce action, but its effects are loſt, or only paſſive; they leſſen in their power by repetition. This is the caſe with opium, and with many other medicines, which produce no action; but when any action is produced, the facility of reproducing it is increaſed by repetition, unleſs it is carried to exceſs—this is the origin of cuſtom, and habit; any action to which we have been accuſtomed, becomes very eaſy by repetition, ſo that it is even painful to leave it off. The greateſt difference between irritability, and ſenſibility, would appear to us to reſide in the organizations of the parts. But it would appear at the ſame time, that the coagulating lymph of the blood is irritable, and the fountain of this property, and the medulla of the nerves appears to be the part of them, which contains the principle of ſenſibility; but many irritations and motions, produce no ſenſations. Strong irritations always produce ſenſations; and from analogy, we believe, that all ſenſations are produced by irritations, or impreſſions, which may, or may not cauſe motions.

Dr. Johnſon, phyſician in Worceſter in England, in his performance on the ganglions of the nerves, endeavours to prove, that they prevent the parts which are ſupplied with nerves from below them, from being obedient to the will; or ſenſible; but that their irritability is increaſed by them. The nerves he ſays, are derived from the medulla of the brain, and they ſpread their medulla over the parts which they ſupply, we are not able to obtain any ſoft part ſeparate from this, and cannot therefore determine whether irritability depends on it, or on the blood. From the great ganglion, formed by the ſympathetic nerve, and the parvagum, all the parts of the breaſt and of the belly are ſupplied; they are as rare in the voluntary, as they are frequent, in the involuntary parts; they alſo prevent the parts from being convulſed, by irritating the nerves above them, they intercept the galvanic ſtimulus, the ganglions ſupply nervous energy, during ſleep, and happily preſerve the parts independent of the mind, and the inteſtines reſemble a gland—the glands appear to have each their ſecreting ſtimuli, and their digeſting fluids, for their ſpecific ſecretions; every part of the body appears to ſympathize with other parts, the action of medicines appears to be produced on the coats of the ſtomach; we are not very ſenſible of any thing when in the ſtomach, only that they invigorate, or produce ſickneſs, or vomiting: either a torpor or irritation of the liver, affects diſtant parts, in weak perſons, the motions of the inteſtines appears to affect the whole ſyſtem. The vegetable poiſons appears to act on the irritable, as well as the ſenſible principle, cauſing convulſions, inſenſibility, &c. Girtanner in his eſſay on irritability, endeavors to prove that oxygene is the element on which it depends, he thinks that the irritability of vegetables depends on the ſame: and that it is contained in tranſparent ſubſtances as mucus, &c. Had he made more experiments, and ſpeculated leſs, his works would have been more convincing, but this one principle, appears to have excluded all others from his mind.—Dr. Darwin's Zoonomia, is ſo well known that we ſhall not analyſe it; ſo far as it is experimental, we agree with him, but he admits of too many ſpeculations, and but few facts, to be ſufficiently convincing.

We have lately had ſome new views opened in experimental Phiſiology, by the diſcoveries of galſaniſm, vital chymiſtry, &c. by F. Humbold; he diſcovered that motion can be communicated without touch, by an atmoſphere of vital power; he alſo ſays that hydrogene, and azote, have more to do with irritability than oxygene, it appears to conſiſt of a mutual action, and oppoſition of different principles; it only appears where there are ſenſible fibres, which appears to contain the principle of action in themſelves, as it can be produced by the contact of ſimilar ſubſtances; as well as by the different metals; but it only ſucceeded with irritable matter. Alkalis, &c. increaſe, or artificially heighten irritability, the tendons, muſcle and nerves of the ſame animals, appear to cauſe contractions, by an unequal diſtribution of the fluid in each, the effect was greateſt where the metal, &c. was firſt applied to the muſcle, then to the nerve, then the irritability would be greateſt; blacklead, or maganeſe are the beſt conductors, &c. all fluids, and mixtures of ſalts, are perfect conductors, except oils and fat, but again, ſoap is a good conductor, but ice or ſteam, inſulates, the ſcarf ſkin either of vegetables, or animals inſulates, and ſome men are better conductors than others. Dividing a nerve, does not interrupt this power, if there is a conductor between its parts, neither do they require to be in contact, friction with non conductors, communicates the power to inactive ſimilar metals, as Dr. Wells diſcovered. Warm blooded animals ſoon loſe their irritability, birds the ſooneſt, &c. a blow on iron leſſens, on zinc increaſes this power, fixed air leſſens; but pure air increaſes this energy, &c. unleſs there are both neves and fibres it does not act. Animals which are torpid in the winter, are very ſuſceptible of ſtimuli in ſpring, not by an accumulation of oxigene, although ſuch quantities are ſeparated from the blood in the brain. Galvanizing produced an inflammatory diſpoſition in ſores, and cauſed a corroſive diſcharge, from the mucus glands, by which means it ran from both metals, &c. in large drops; moiſtening the inteſtines with a ſolution of alkali, increaſed both the periſtaltic motion and the pain ſix-fold. Its action appears to be ſtrongeſt in the involuntary muſcles, &c. the principle he thinks exiſts in the organs themſelves, and the metals are the only attractors of it, whereby they ſeem to increaſe it when dull, either iſſuing out of, or entering into the nerves, it appears to act as a ſtimulus. The whole phenomena appears to depend on the reſiſtance given to the paſſage of the fluid, by imperfect conductors: and the force ſeems to be in proportion to the reſiſtance and this is leſs, in animal matter, than in metals, and leſs in ſimilar, than in diſſimilar metals. In all living animal bodies, ſo long as they are irritable, this fluid appears to be in unequal quantities, in the muſcles, and nerves; in them new combinations, and decompoſitions are continually going on: in each organ alſo, this fluid appears to be in a ſtate of circulation, and to be unequally diſtributed in different times; a nerve produces no action by touching its own muſcle, by being bent back, to it, but if ſeparated, it does act on it by contact, &c. becauſe the fluid is accumulated in the nerve, when ſeparated from its connections. Galvaniſm may be conſidered in the ſame manner as vitality ; by it volition may perform muſcular motion, in the ſame manner as the metals, by means of the nerves, emitting a greater quantity than uſual of the fluid, into the muſcles, a change appears to take place, which cauſes the turgeſcence of the muſcles. As the blood loſes its oxygene; hydrogene, and azote are formed, in the animal proceſſes, by circulation, ſecretion, digeſtion, exerciſe, &c. the longer this fluid is accumulated in the nerves, and the greater the hindrance to the diſcharge taking place, the greater is the effect which it produces. A ſtonger ſtream meeting a weaker, carries it along with it, but if nearly equal they balance each other, &c. Dried bones, rarefied air, flame, and warm glaſs, conducts electricity—but inſulates galvaniſm, this is but a ſmall difference, for theſe are all very imperfect conductors of electricity, and probably they are as bad inſulators of galvaniſm. Experimental diſcoveries may be very uſeful, although the extent of their application does not appear at firſt.

The moſt certain teſt of death, appears to be, removing the covering from a few muſcular fibres, and trying whether they are affected by the Galvanic arch ; but electricity may anſwer better as a means of reſuſcitation, applied to the phrenic region ; or the arch may be extended from the mouth, to the rectum. It may be uſeful in diſeaſes of the eyes, (from a torpor, we ſuppoſe) or in paralytic, and rheumatic affections. Galvaniſm, alſo diſtinguiſhes nerves from other parts—by means of the marine, and nitrous acids, Reil diſcovered the nerves of the chryſtaline lens (ſight) of the eye, and the fibres of galatinous worms, &c. although all animal, and vegetable fibres are irritable, during life ; they do not all ſhew this viſibly by contractions : for ſlow ſtimuli, as hot air, &c. produce no ſuch effect, a medullary fluid ſeems to flow through the nerves during contraction, for they are weakened by repeated ſtimuli ; and alcohol, or pot-aſh, makes them more irritable, but does not increaſe their energy. The ſtate of the organs appears to determine the actions of ſtimulants, or ſedatives ; for theſe ſubſtances have not their actions inherent in themſelves.

Oxygene, is only one of many agents of vitality. The vital parts recover their exhauſted energy, in a little time, and may be irritated again by the ſame ſtimuli, by which they were exhauſted; upon this life depends, and a knowledge of it, is of the firſt importance. Irritability is very different, in different animals; and even in the ſame animals, at different times, for every change ſeems to modify it; and it is in a continual fluctuation—but it is greateſt in torpid animals, in the ſpring, when getting out of their winters torpor. Heat, light, and electricity, are all ſtimulants—the depreſſing, and exhilirating effects of different winds, he thinks, are owing to electricity; but it is probable, that other principles are as much concerned in this; for inflammable air appears to hurt it much, ſo does fixed air; where theſe are preſent, even in ſmall quantities, they hurt it very ſenſibly. Worms, and leeches, ſtiffened by a ſolution of pearl aſh, have recovered by electricity; but if they are only a few minutes immerſed in alcohol, they will not recover. Heat increaſed the number of pulſations, in the hearts of animals —cold either leſſens, or altogether ſtops them, when applied to the naked hearts, either in water, or air—but if a perſon is put into the warm bath, it increaſes the external heat, and derives the vital energy, and the fluids outwards, and alſo, by a ſoothing quality, leſſens the pulſe: ſo that it is apt to cauſe a faintneſs, &c. cold continued, will of courſe increaſe the ſtrength of the fibres, but heat leſſens it—cold is not antiſeptic in the living, although it is in the dead fibres. The extrication of inflammable air, appears to be the pernicious principle, extricated from ſtagnant water. The hearts of cold blooded animals, were ſtimulated by the blood of warm blooded animals; but the hearts warm blooded, were not ſtimulated by the blood of the cold blooded animals. This ſhews that the blood of cold blooded animals, is leſs ſtimulant, and their hearts are eaſier irritated, as they were applied to the outſides of them, they could not act in either caſe by diſtention.

Immerſion in pure air, alſo increaſes the number, and ſtrength of the pulſations, and cauſes them to continue longer; but fixed, or inflammable air, either ſtops the motions altogether, or at leaſt depreſſes and renders them ſlower; even a deficiency of oxygene, produces leſs inconvenience, than the preſence of theſe noxious airs.—In an upright poſition, the pulſations increaſed in number, in a horizontal poſition, they decreaſed with the diminution of energy, eſpecially if the pericardium, with the veſſels are tied over it. Azotic gaſs appears to be the leaſt noxious; the next is the inflammable air; but the fixed air is the worſt of all, in deſtroying the motions of the heart, or lungs; yet taken into the ſtomach, its effects are rather ſalutary—-hot air, he found to increaſe the irritability, but it ſooner exhauſts it. Haller obſerved the ſame in the heart; the motions are quicker in hot air, but continue longer, if not expoſed to it at firſt, until they are near ceaſing, and then it renews the pulſations, &c. fixed air deſtroys irritability irrecoverably; the inflammable, or azotic air does not—fixed air changed the red colour of fleſh, to a dark brown, but pure air recovers it again.—Inflammable air changes the colour of blood, &c. Air containing one fourth its quantity of pure air, (oxygene) extinguiſhed flame, where there was fixed air preſent: it is difficult to ſeparate it from pure air: the preſence of it, or of inflammable air, renders the atmoſphere deleterious; vegetables live in inflammable air, but are deſtroyed by fixed air, &c. A mixture of inflammable, and fixed air, contaminated with empyerimatic oils, &c. depreſſed the vital energy, even more than fixed air. Nitrous (azotic) air, was rendered more pernicious, by a mixture of phoſphoric air, &c. Spirit of wine increaſes the irritability at firſt, but ſoon exhauſts it totally; it hardens, and diſcolours the muſcles: but alkalies ſoften them again. Theſe effects were more ſenſible on the heart, than on the voluntary muſcles; ether was more active than the ſpirit. The mineral acids ſoon exhauſts the nervous energy, by convulſive motions, unleſs diluted; the vegetable acids, would appear to be refreſhing when ſmelled: as they and vinegar ſometimes remove fainting. Alkali will not recover a part exhauſted by acids; but if the alkali is firſt uſed, the energy may be ſeveral times raiſed, and depreſſed by means of the acids. This led to the uſe of alkalies in convulſions, with opium, alternated with acids, ſucceſsfully. Muſk, camphor, and volatile alcali, act ſimilarly with opium—immerſion in oil, removed the ſtiffneſs cauſed by arſenic. Bark and galls increaſed the ſtrength of muſcular fibres—ipecacuana, and emetic tartar, ſtimulates, but weakens. Life appears to conſiſt of compoſition, and decompoſition.

Had we evident, and ſenſible marks, and accurately defined terms, for every degree of variation of the human body, from the ſtate of perfect health, the practice of phyſic, would be a far more certain, as well as an eaſier ſtudy; but the inveſtigation and fixing of theſe different ſtates, has unfortunately for the art, and for mankind been too much neglected. An endeavor to attempt ſomething in this way, is a principal object of the preſent work. This is ſomething of the nature of what Sydenham wiſhed for; but unfortunately, he, venerable man, like many others of his cotemporaries, took the wrong path for it, by a a ſearch after ſpecifics; for this is the purſuit of empyrical practitioners in all ages, and countries. But as any particular medicine, &c. may be always had very nearly the ſame ; this would be a very eaſy ſtudy, was the human frame like a machine, upon which they would always have a certain, and determinate action. But as we are certain, this is not the caſe, it is to the variations of the ſtate of the human body itſelf, that we are to apply, as medicines are of no uſe, but as they are properly applied to it, and poſſeſs no proper inherent medical virtues in themſelves, but when applied to the living body. Therefore a thorough acquaintance with it, conſtitutes the beginning, the medium, and the end of phyſical medical ſtudies, as it is in health and diſeaſe. But notwithſtanding, this is the pole by which we are to ſteer our courſe, in the art of preventing and curing diſeaſes: as the human body is continually ſurrounded, and acted upon by other phyſical, and mental cauſes; we are to extend our reſearches to them, but always keeping in mind, the *cui bono*, leſt we wander into the curious, and neglect the uſeful, for in this way, much time and labour might be ſpent, to little purpoſe.

If we conſider medicine as a ſcience, or as a ſyſtem of rules, it unqueſtionably, with all its collateral and auxiliary branches, forms a principal department of phyſics, or experimental philoſophy. The knowledge of medicine, however, at preſent conſiſts chiefly, and almoſt entirely, of a collection of individual obſervations, ſyſtematically arranged, from which uſeful rules, confirmed by experience, have been deduced for practical purpoſes.—Indeed it muſt be allowed, that we are not yet in the poſſeſſion of ſcientific proofs, or analytical demonſtrations of theſe rules, ſo that we might reduce them to firſt, and general principles, &c. Our indications for aſcertaining their reality, are not ſufficiently eſtabliſhed; and conſequently, have hitherto only had a technical, not a ſcientific meaning.

Medicine, on the other hand, conſidered as an art, is ſtill in its infancy; an aſſertion, which no candid and intelligent practitioner, will attempt to controvert; even for the moſt valuable therapeutical, and eſpecially the dietetick diſcoveries, and improvements, &c. We are more indebted to accidental obſervations, and analogical conjectures, than to an eſtabliſhed ſcientific theory. The modus opperandi of medicines, as well as regimen, are ſo far obſcure, that the whole difference between the rational preſcription, and thoſe which are termed ſpecifics, depends upon the application of rules, by which the technical application of the remedy is, in every inſtance determined—ſo long, however, as we are obliged to have recourſe to ſpecifics, medicine muſt remain an imperfect art, and deſtitute of ſcientific principles, and unreducible to a ſyſtematic form.

Notwithſtanding theſe defects of medical ſcience, we may obſerve a conſtant, and ſtrong deſire in the human mind, to reduce every phenomena of animal bodies, to general principles, and to explain from theſe, by ſcientific deductions, the moſt ſuitable technical methods; not merely in an empyrical, but philoſophic manner, to vindicate our medical treatment, *a priori*, by the general laws of nature, and thus to effect a gradual, though indiſſoluble connection, between the ſcientific theory and practice, and to this object every attempt to eſtabliſh a theory ſhould be directed.

Phyſianthropy ought to be the true baſis of all medical ſcience, conſequently it ſhould comprize the natural philoſophy of the human body, its principles, laws, and properties, as anatomy does its ſtructure: the immediate application of the doctrines, of organic animal nature, to man in particular, and to the relation which his ſtructure, and economy bears to the mind—but this is mental, &c. Phyſiology comprizes the deſtination of the functions, and parts of the human body, or the knowledge of its healthy ſtate, but this definition is very inaccurate. If we ſeparate zaography from our preſent phyſiology, we ſhall find it much circumſcribed, and even the remainder is moſtly zoology, being limited merely to the healthy ſtate, not taking notice of the relation, ſubſiſting between the objects of nature, and the changes to which animals are ſubject. To acquire this knowledge, the relation between animate, and inanimate matter, muſt be diligently attended to. Our beſt works hitherto, ſcarce furniſh us with ideas of the organization, and the economy of the vital powers, but their relations amongſt themſelves, and the agency of external impreſſions are overlooked, &c.

To conſider man in a phyſical light, the philoſophy of the human body, is the firſt and moſt neceſſary diviſion of medical ſcience, and then thoſe things which act upon, or in any meaſure affects our phyſical exiſtence; to the firſt of theſe diviſions, belongs the due exerciſe of all the functions with eaſe, and regularity, and in this conſiſts health. But as men are ſubject to many variations, from due health, and to various and intricate diſeaſes, without which the functions even of health, would not probably have been much thought of, we are in the next place to inveſtigate the cauſes of theſe; which we ſhall find partly owing to variety of conformations, habits, ſtates or temperaments, and likewiſe partly to the operation of external cauſes, of various kinds, as aliments, air, or regimen, infections, or accidents of ſeveral kinds, and again we are to conſider the different remedies for all theſe maladies, whether externally applied, or taken internally. The intentions for which we apply them, and their modes of operation, theſe conſtitute human phyſicks, or what may be properly denominated Phyſianthropy.

In the application of this ſcience, we would wiſh to begin where phyſicians have commonly left off; and build upon the experiments, and obſervations, of health, diſeaſes, and their remedies: upon practical phenomena, and from them draw the rules, or laws, of the human frame, as it is acted upon, by other agents in nature, as well as mental cauſes; and again apply theſe rules, and laws to practice. This is after the manner of what Lord Verulam, wiſhed to be done in phyſics, and if any one will but ſeriouſly conſider, the ſubject, he will at once ſee the neceſſity of this ſcience, over and beſides all that is commonly attended to, founded upon the hiſtory of medicine, the beſt of all foundations, for without this, and a ſtrict attention to medical philoſophy, what does the common ſchool diviſions of medical ſtudy teach us? for without this the practice and ſtudy of anatomy, can only be uſeful to us in the manual operations of ſurgery. And chymiſtry can only aſſiſt us to be preparers of medicines; and what has too much diſgraced the profeſſion, hypotheſis, and ſpeculations have, too generally been ſubſtitued in the place of theory: as thoſe muſt be convinced who will but take a view of the different ſyſtems of theory, which have at different times appeared in the world, ever ſince Galen. And even long before him. And even the practice of phyſic, or the art of healing, the end for which all the ſubſervient branches are cultivated, without medical philoſophy is neither more nor leſs empyriciſm. Therefore he who can manage this moſt uſeful ſcience, is to all the others, what the maſter architect is, to the different tradeſmen employed, in erecting an edifice, they do the mechanic parts of the work, but he by a proper knowledge of the whole of the arts, reduced to a ſcience, is enabled to direct them all, in the particular lines of their duties, and to raiſe a regular ſtructure, both uſeful and ſymmetrical in all its parts. Whereas, unleſs ſuch a ſcience had been formed, to diſpoſe of them, even after collected, they would only form a confuſed maſs. Juſt ſo it is with the collections of obſervations, and experiments in the medical profeſſion, unleſs they are duly arranged, and applied; by their vaſt number, collected during three thouſand years, by all the cultivators of the profeſſion, in different countries, they are voluminous enough to cauſe deſpair in the ſtudent, at the ſight of even a part of them. But when their uſeful parts are ſkilfully extracted, and arranged, a general chart or map of all may be given in a moderate compaſs, and afterwards, the particulars may be more accurately delineated by themſelves, with tolerable perſpicuity. A great part of medical literature, is rendered almoſt uſeleſs, on account of the inaccuracy of the manner, in which facts are related, and the neglect of the collateral circumſtances, relative to the ſick, and the nature of their diſeaſes: for the bare names of diſeaſes, are very inſufficient criterions to judge by, or even the ſymptoms themſelves, unleſs we are able to inveſtigate the phyſical cauſes of the ſymptoms likewiſe: for I believe we may take it for granted, that medicines may be had of exactly the ſame ſtrength, and properties, in any time or place, but we know how different they are, in their operations and effects, but in ſimilar ſtates there can be no doubt, but they would produce the ſame effects; but as this is not always the caſe, we muſt ſearch for the cauſes, in phyſianthropy—and we ſhall then find, when accurately acquainted with human phyſicks, that the ſame cauſes always produce ſimilar effects; ſo that we ſhall find, by attention to this ſtudy; that the names of diſeaſes, in their preſent imperfect ſtates, are of much leſs uſe to a real phyſician, than is commonly imagined: for as many of theſe names were impoſed upon them, when there was very little known of the operations of nature, they are moſtly arbitrary, ſerving but very little to explain the ſtate of the ſick, neither have modern noſologiſts leſſened our perplexity, or facilitated the avenues to truth, to take them in the moſt favourable point of view! and under this head, we may obſerve the egregious folly of thoſe, who ſeek after noſtrums, antidotes, ſpecifics, panaceas, &c. for there is not one ſpecific in nature, for any one diſeaſe, for they every one fail unleſs ſcientifically uſed. Although the curing of diſeaſes, is what all practitioners aims at; yet how widely different are their qualification.

The ſame medicines never can be accommodated to different perſons, even in the ſame diſeaſes, unleſs the human frame, was as invariable as a machine, and likewiſe always acted upon in the ſame manner, by all other agents, as food, air, exerciſe, &c. and beſides age, ſex, and habit, are to be taken into conſideration; as alſo, ſeaſon of the year, place of abode, and a great many other circumſtances: ſo that it is very eaſy to perceive, that to be competent to undertake the curing of diſeaſes, to the beſt advantage, requires a great number of years cloſe application, even of the moſt apt genius; and by far the greateſt number of men, could never be fit for any ſuch truſt, as to determine in obſcure caſes, where life is at ſtake! not more than they could be made poets, mathematicians, chymiſts, or philoſophers. Indeed of all profeſſions, the thoughtleſs ſhould not aim at being phyſicians; for here both extenſive information, and genius is required—whereas, information alone, is ſufficient in the other profeſſions, with a common ſhare of genius, as the exact line is marked out for them; therefore, application and memory is all they want. But the phyſician, the politician, and general commander of an army, ſtand upon ground, ſomewhat different; here much genius is required, as well as extenſive information, and a readineſs, and deciſion in applying it to practice; and yet events, which human prudence could not foreſee, often fruſtrate all their beſt laid plans, and too often, inſtead of being judged by the merits of their undertakings, they are condemned through want of ſucceſs. But if the principles of the healing art, can be reduced to ſcientific order; it is undoubtedly an object of ſufficient importance, to merit the attention of the ſtudents of nature; but then an important queſtion ariſes, what is the beſt method of doing this; or, have we not a ſufficiency of ſyſtems already upon the ſubject? Of the ſort they are, there are probably too many; but when it can be eaſily proved, that not one of them, nor indeed all of them together, contain all of our preſent acquiſitions; they are certainly imperfect, and as we improve in our acquaintance with nature, we ſhould improve, or even diſcard the old ſyſtems, as inadequate to the purpoſe for which they were intended, by their compilers, or inventors, and go again to the ſources of information; and from the hiſtory, and the obſervations and experiments of our predeceſſors, and deduce rational and uſeful rules, precepts, and the laws by which all things are governed, relative to the human body, its diſeaſes, and their cures; not repreſenting it as a finiſhed ſtructure, but pointing out its deficiencies, and the methods of correcting them; as well as pointing out its beauties and perfections without exaggeration.

Anatomy may teach us the appearance of the different parts of the body, and their connexions; but their uſes, functions, and modes of operating on their contained fluids, and upon one another, and the influence of the mind, or of phyſical agents upon them, muſt be learned from a higher ſource.

Remarkable Cases in Medical Surgery, &c.

IN my ſecond return from India, in the year 1787, an old ſeaman, aged about 50, of an irritable habit, having been moſt of his life at ſea, pricked the fore-finger of the left hand, with a ſail-needle, and a day, or two after, it began to ſwell, and was painful; he then ſhewed it to me, and was directed to put a poultice on it; two days after which, he returned, and having been negligent in the poulticeing; the ſwelling was extended over all his hand—as the caſe now ſeemed to be ſerious, poultices were prepared for it, of pounded biſcuit, and linſeed, the only articles we had at the time, for the purpoſe; but in two days more, the ſwelling was extended to his elbow. From this it was both fomented, and poulticed twice a day, and in two days more, the ſwelling had advanced to his ſhoulder. The whole arm was as thick as his thigh, it was laid in poultices, and the fomentations continued twice a day, and bliſters ſoon appeared on it—as he was feveriſh in the beginning of the affection, he had ſome mild laxatives, and antimonials; but now he had bark, and wine, with laudanum. He took four quarts of port-wine, and ſix ounces of bark, in four days, with about 60 drops of laudanum, each day. And although a gangrene, had actually commenced, his arm and his life were ſaved; for the arm had been totally inſenſible, and livid coloured, and bliſtered all over. A ſuppuration took place, up to the elbow, and diſcharged large quantities of matter.—Here, it is plain, the inflammation was of an erythematic nature; for had it been phlogiſtic, the wine, bark, and laudanum, would have increaſed it. He was juſt recovered, as we got into the river Thames, with only a ſmall ſore on the back of his hand, where the matter had diſcharged, and where a ſmall mortification had taken place. This caſe was a very plain example of the difference between phlogiſtic, and erythematic inflammation. Had this been a young, robuſt patient, other treatment muſt have been purſued.

A caſe of a paralytic affection, of the kidnies, cured by the introduction of a catheter.

In the winter of 1796, G. M. aged about 55, who had paſſed ſome part of his life in the W. Indies, and had lived freely; but finding it hurt his conſtitution—he had not for many years paſt, uſed any ſort of liquors; and he was of a delicate habit of body. In the cold weather, he was taken with a ſlight feveriſh indiſpoſition, apparently from the effects of a cold, which appeared to yield to the common treatment readily enough. But what appeared remarkable in his caſe was, that he made no water, nor had he an inclination to make any; no uneaſineſs in the parts, nor ſwelling over the pubis, on ſearching for it. On which account I did not think the introduction of a catheter, would be of any uſe at firſt, as it was plain there was no urine to be evacuated. He now had ſeveral diuretics, but they produced no effect, and often ſearching above the pubis, no tumefaction of the bladder could be perceived; but the third night, thinking the introduction of a catheter, would give a ſtimulus to the parts, it was tried, and only about a ſpoonful, of a glairy mucous ſubſtance was diſcharged; but in five minutes afterwards, he had an inclination to make water, and paſſed about one ounce, ſoon after which it returned with the ſame effect; and continued at intervals, through the night, ſince which, we believe he had no return of the affection. Here the kidnies muſt have been the parts affected; for there was no obſtructions to the evacuation of the urine, had it been ſecreted, and the ſtimulus which the catheter gave, to the neck of the bladder, the urethra, &c. muſt have been communicated along the ureters, to the kidnies, and renewed their actions. This, and ſimilar caſes, points out to us the importance of paying attention to the effects of ſtimuli, and the ſympathies between different parts.

Capt. H. W. Butler, a native of Maſſachuſetts, about 35 years of age, thin and active; had his hand much ſhattered by a piſtol ball in a duel, it entered at the ball of the thumb, broke the bones, and lodged in the outſide of the hand—as the pain was exceſſive the inflammation roſe very rapidly for the firſt week, until it extended to his ſhoulder. As our firſt care was to prevent a mortification, the hand and arm were fomented, and poulticed twice a day, and every means was uſed, ſuch as bleeding, and a doſe of ſalts every two or three days, and antimonials at night, and by theſe means a mortification was prevented; but a ſuppuration took place, and diſcharged great quantities of matter from the arm, and on the firſt of May, he was beginning to recover, and could ſit up, and his appetite was returning, and he had every appearance of being paſt danger—as he had been much in warm climates, a locked jaw, was ſometimes mentioned, by himſelf, as a poſſible accident. May 2d, in the evening ſitting up beſide a window, he probably got cold, and when he went to bed, he mentioned a ſtiffneſs of his under jaw; and the next morning it was greater, and gradually increaſed for three days, by which time the edge of a dollar could ſcarce be admitted between his teeth. But from this time it affected him by paroxyſms, at uncertain intervals, eſpecially, when he was agitated by any means: ſuch as by any thing falling on the floor, or opening his room door haſtily. During theſe fits, he was all in tremors, every joint of his body was affected with violent rigors—his jaws were firmly clenched, the head drawn backwards, or a little to one ſide, and he was in a ſtate of inſenſibility; ſometimes they recurred every ten or fifteen minutes: at others, not for ſeveral hours. Opium and the warm bath were tried to their full extent; they appeared to be uſeful at firſt, but both ſoon loſt their efficacy—bark, and wine, were alſo tried without ſucceſs. The doſes of opium were increaſed to four or five grains every four hours, but to no purpoſe; and he departed May 9th, the 7th day from which this affection began. In theſe violent rigors, he required ſeveral men to hold him, to the laſt. He was ſometimes troubled with a ſuppreſſion of urine, and he had a pain under the ſternum. But from being often with him, I unexpectedly diſcovered, that the muſcles were unaffected in the moſt violent of theſe rigors, contrary to what they are in ſpaſmodiac affections.—This diſeaſe appears to me, to be totally confined to the ligaments, and they are univerſally affected all over the body: firſt the maxillary ligaments, which retains the lower jaw in its place, and the great dorſal ligament, which extends down the back, and thoſe of all the joints of the body, and that under the inſide of the ſternum, and every ligament of the body, appeared to bear their part in this affection. This young man, having no friend, or relation near him, was one reaſon for my being more about him than ordinary. This affection aſſumed all the appearances of tetanus, emproſthotonus, &c. and every ligament was affected, in proportion to its magnitude.—We believe this obſervation is new in the pathology of this diſeaſe; and we ſuppoſe it is always the caſe, in theſe affections, although they have been called ſpaſmodiac, or convulſive.

A caſe of the catalepſy, which appeared in Philadelphia, in Auguſt, 1793.

On the firſt of Auguſt, about 8 o'clock in the evening, I was called to a Mrs. Cooke, who lived at No. 78, South Third Street, who had every appearance of being dead. She was moderately plethoric, apparently of a ſoft or phlegmatic habit of body; ſhe had been married for ſome years, but had no children; not having been the firſt phyſician they had ſent for, although the firſt they found at home; ſhe had been taken ſome time before I ſaw her, and found her laid on a bed, without any appearance of life, or motion, either in her breaſt, her heart, or pulſe, and moſt of thoſe about her, actually thought her dead—as it was very warm weather at the time, ſhe was moderately warm. If there was any motion of the pulſe, it was ſo weak, as not to be perceptible; when her arms, or legs were moved, for they were flexible enough, on lifting them up, or ſtretching them out, they would remain in whatever poſition they were put into. My firſt attempt was to apply common ſnuff to her noſe, and to pour ſpirit of hartſhorn, and water down her throat, but to no purpoſe. Next we attempted to draw blood from her arm, but could procure only three or four ounces, its motion was ſo very ſlow—frictions of her arms, breaſt, and legs, were alſo uſed to as little purpoſe; with ſome degree of agitation of the trunk of the body, in order to excite the reſpiration, and propel the circulation, but to no effect; ſpirit of hartſhorn, had been applied to her noſe, and rubbed to her temples, and wriſts—the windows were open all the time, and fanning her to renew the air. Vinegar had likewiſe been uſed to her noſe, but to no purpoſe. We ſuppoſed there was a vermicular motion of her pulſe, but could not be ſure of it—by this time I had been with her about half an hour; but now happily hit upon the only plan, which we believe would have rouſed her—for her huſband, and thoſe about her, thought her dead, and were preparing to lay her out, and bury her. But that which firſt had any effect, was an emetic, of tartar emetic, two grains, and ſix or eight of ipecacuana, and forty, or fifty drops of the volatile aromatic ſpirit, in a ſpoonfull of water, which we had to repeat, two or three times, before the quantity ſpecified, could be forced down her throat, as it run out of her mouth, the ſame as though ſhe had been dead, without any effort, or motion of her own, either to ſwallow, or avoid it. We endeavoured with a handle of a ſpoon, to force open the paſſage into her pharinx, and to try to force ſome of it down, which after ſeveral attempts, we partially ſucceeded in; and at laſt, from the irritation of the ſpoon, and the fluid together, we could for the firſt time perceive, ſome ſymptoms of her ſenſation returning; the palate, and neighbouring parts, ſeemed to be the firſt which had any appearance of ſenſibility, for by the irritation of them, we firſt perceived that ſhe made a faint effort with her jaws, to avoid the introduction of the ſpoon: we perſiſted however, until we had forced down, what was judged ſufficient to vomit her, and then let her alone for ſome time. For the ſtomach, as we had judged, was yet ſenſible to the effects of the emetic, which began to operate in half an hour; and from the firſt effort of the heaving beginning, her ſenſes returned gradually, and in about half an hour after, ſhe was quite ſenſible—this was an hour and an half, or two hours from the time I had firſt ſeen her; and about three hours from the time ſhe was found inſenſible; as ſoon as ſhe could ſpeak, ſhe complained of a ſenſe of ſuffocation, and oppreſſion of the breaſt, &c. By this time we had leiſure to inquire of the woman of the houſe, (whoſe name alſo is Cook, and lives yet in the ſame houſe,) how, or in what manner ſhe was taken—ſhe informed me, that when ſhe was going to her tea, in the evening, the patient was ſitting in the room with her, and ſhe aſked her, if ſhe would have a diſh of tea, which the patient refuſed, and ſat ſtill in the ſame place, apparently low ſpirited; but in a ſhort time after, on looking towards her, ſhe was exactly in the ſame place, and poſition; but now ſomething in her countenance, appeared very uncommon; ſhe ſpoke to her, but the patient ſat as a ſtatue of marble, whithout any motion in her eyes, or appearance of life; ſhe then was terrified, and called in the neighbours, who tried ſeveral means to rouſe her, but without any effect, and they had carried her up to the bed, where I found her in the manner already deſcribed. A Mr. Liddel, a joiner, who lived oppoſite, was with her the whole time.

Auguſt 2d, She complained of great pain, and oppreſſion of the breaſt, and difficulty of breathing, and as ſhe had been labouring under obſtructions of the catamenia, for ſome time, we therefore repeated the vene ſection to ten or twelve ounces, and gave her half an ounce of Rochel ſalts, as ſhe was coſtive. And at going to reſt, (as ſhe was a little feveriſh) ſhe had an antimonial draught, with a few drops of laudanum, in order to cauſe a perſpiration, and procure reſt in the night, which ſhe had not enjoyed well the night before. 3d, The oppreſſion of her breaſt, and feveriſhneſs, were both much alleviated; ſhe had the ſame medicines, repeated at night as before. 4th, She complained of great oppreſſion, and laſſitude, all over her body and limbs, for which ſhe had the ſaline mixture, with volatile aromatic ſpirit, forty drops, and antimonial wine, twenty drops every ſix, or eight hours. The 5th, and 6th, the mixture was repeated as before. 7th, as ſhe was weak, but not feveriſh, ſhe had pills compoſed of extract of bark one drachm, ſalt of ſteel one ſcruple, made into twelve pills; of which two were directed to be taken morning, and evening—by this time ſhe was able to ſit up, but ſhe was weak, and languid, as one recovering from a violent fever; but ſhe recovered gradually.—11th, The pills were repeated as before; ſhe took them as a reſtorative, and was entirely recovered by the 14th. and never ſince, nor before, had any return of this affection, or of any thing ſimilar to it, although ſhe ſometimes had ſlight hyſteric, or nervous affections—ſhe always after ſaid, that I had ſaved her from being buried, and it was probably the caſe.

This I believe, was a true catelepſy, and as it is a rare diſeaſe, which many medical gentlemen never have an opportunity of ſeeing, I thought it my duty, not to ſuffer it to be loſt, eſpecially as the ſucceſsful method of treating it, is here along with the deſcription—as it was the firſt caſe of the kind I had ever ſeen, I was directed in the cure of it only by medical philoſophy.

To the friends of Experimental Medical Science.

AMONG the varieties of medical ſtudies, there are ſome of much greater importance than others; but the number of objects are ſo various, as in ſome meaſure to diſtract ſtudents, when they attend to them each in particular. But by beginning with giving general views, and from them deſcending to particulars in an analytic method, much confuſion may thereby be prevented, neither are the principles and practice, of the whole of the healing art, incompatible with each other, for they never can be fully or clearly underſtood, when ſeparated; and what every perſon who intends to cultivate the profeſſion, ſhould learn, there ſhould certainly be ſome perſons capable of teaching, as far as language can aſſiſt. The principles of phyſic and ſurgery, are the ſame, and ſurgery is beyond all doubt, the only ſenſible, and rational mode of introduction to the practice of phyſic, and in a courſe of elementary inſtruction, we believe they ſhould always be united, at leaſt in a firſt courſe, and the ſubdiviſions might be attended to, with more advantage afterwards—beſides there are many, who would willingly attend one courſe of inſtruction, who cannot readily attend ſix or ſeven. Here we propoſe to confine ourſelves to the phyſical nature of the human body, and its different conditions when in health and diſeaſed, and the effects of the different departments of regimen, ſuch as exerciſe, or modes of life, food and drink: and the effects of the different ſtates of the atmoſphere; whether cold or warm, pure or adulterated, the different temperaments, ages and ſexes, the effects of morbid impreſſions, and the operations of medicinal applications, to obviate or cure them. When we leave out antiquated theories, and uſeleſs ſpeculations, we ſhall find the indiſpenſably uſeful parts of the ſcience, and practice, reducible to the moderate extent of one courſe, which when completed, will amount to, from ninety ſix to one hundred lectures.

The means of preſerving, and of reſtoring health, by the various departments of the healing art, as by regimen, medicines, ſurgery, &c. and the ſciences connected therewith; but particularly phyſiology, ſhall be duly attended to, with their applications. In the preſent ſituation of the principles and practice, the relation between natural philoſophy, and the medical ſcience, is ſo obvious to every one who is acquainted with theſe ſubjects, that they have been compared to twin ſiſters, which languiſh and pine, when ſeparated. And it has been the ſentiment of many of the moſt eminent philoſophers and phyſicians, that if true medical ſcience was more generally known, ſo as to form a part of a liberal education, the improvements in it would be more rapid, and it would be held in greater eſtimation, with the well informed part of the world; for by this means, they would be enabled to diſtinguiſh the intelligent practitioner, from the ignorant pretender; and the idle ſpeculator, from the collector of facts, and the ſcientific deductions of experience. Hereby hypotheſis would be expoſed, as well as the abſurdity of empyriciſm detected.

Phyſic had its origin in experiments, made either accidentally, or by conjecture; but this is no good reaſon, why we ſhould always remain ſo; for a long courſe of experience leads to rational deductions, and theſe again lead us to carry on our experiments, and obſervations, in a more ſcientific manner. All arts and ſciences had their origin in neceſſity, obſervation, or experiments. But as a great number of obſervations, &c. only tends to confirm the ſame truth, we come more directly to the purpoſe, by collecting the principles, and laws reſulting therefrom, by only tracing the remarkable occurrences, which have led to them. This mode differs widely, from that of aſſuming principles, &c. upon conjecture, and founding hypotheſiſes upon them; ſo that although the healing art may be only experimental, as it was in former times to all its members, or even conjectural to the leſs informed; it is a rational ſcience, to well informed phyſicians of the preſent day. The bare hiſtorical part, comprehends the experimental, but the phyſical reaſoning on the principles, and laws, are collected ſrom this, and from practice, ſo that the difference between empyriciſm, and experimental ſcience, is by this means illuſtrated, and their different merits and uſes explained at large, in a manner comprehenſible to moſt perſons.

It appears to be the moſt uſeful, and comprehenſive manner, to begin by giving a general view of our different ſubjects of inveſtigation, upon a ſmall ſcale, in a connected manner, and from that to proceed to the particulars, in the amallytic method—the former is beſt adapted to teaching, and this to improvement; theſe two ways of purſuit have ſeldom been united in any courſe of inſtructions. The hiſtorical introduction, will of courſe be ſynthetical; the ſcientific, will be in the analytic mode of inquiry; and the practice, the reſult of all the parts, by a diligent collection of faithful experiments, and reaſoning upon them.

The Physical Principles of Medical Science; and their application to Practice.

I. HISTORICAL, and Introductory Preliminaries.—The progreſs, and preſent ſtate of the principles, and practice of the art of healing, in various parts of the world, and at different periods of time.—The doctrines of the different ſects in medicine, the cauſes, and conſequences of their particular tenets, their enthuſiaſms, &c.—The beſt method of ſtudying, of obſerving, and improving medicine inveſtigated.

II. Phyſianthropy, or the phyſical nature of the human body, and the manner in which it is affected by external agents.—The properties, principles, and laws of human life.—The varieties of conſtitutions, and temperaments.—The cauſes, phænomena, and modus agendi of morbid affections, &c.—The genera.—Species, and varieties of diſeaſes, &c.

III. The modern improved practice, of the various departments of the healing art, by means of regimen—medicinal—or ſurgical applications, deduced from obſervation, experience, and reaſon.—The genera of diſeaſes we mean to arrange, according to their phyſical natures, deduced from their phenomena, ſymptoms and remedies, &c. and in aſcertaining the ſpecies, we are to conſider the cauſes, natures, and treatment appropriated to them.—The varieties are learnt from the appearances, &c.—The genera and ſpecies, and their proper diſtinctions, ſeparations, &c. is the moſt important and difficult part of our diviſion; as in remittents, intermittents, and fluxes, we are not always able to aſcertain them. Theſe may be denominated converging, and evaneſcent, and we muſt depend on their cauſes, and their various appearances from the preceding, and preſent ſtate of the patients.

A SYNOPSIS of the Genera and Species, of the principal Diseases of the Human Body.

Genus I. Species.

Accidental or Surgical Diseases.

- Luxations
- Fractures
- Caries
- Rickets
- Exoſtoſis
- Anchyloſis
- Sphacelus
- White Swellings
- Inflammations
  - Phlegmonous
  - Eryſipelatous
- Wounds
  - ———Simple
  - ———Lacerated
- Ulcers
  - ——Simple
  - ——Fiſtulous
- Tumours
- Scrophula
- Scirrhus
- Cancers
- Herniæ
- Cataract
- Stone
- Parturition

Genus II. Species.

Fevers, periodical and continued, converging and evaneſcent

- Symptomatic
- Intermittent
- Remittent
- Continued
- Synochus
- Typhus
- Peſtilential
- Small-Pox
- Meaſles
- Puerperal
- Hectic.

Genus III. Species.

Spasmodiac Diseases.

- Convulſions
- Hyſteria
- Hypochondria
- Epilepſy
- Hooping Cough
- Nervous Aſthma
- Tetanus, &c.
- Hydrophobia
- Mania.

Genus IV. Species.

Paralytic affections

- Palſy
- Apoplexy
- Catalepſy
- Coma
- Syncope
- Dyſpepſia
- Hypochondria
- Dropſies

Genus V. Species.

Morbid excretions

- Cattarrh
- Coryza
- Diarrhea
- Cholera
- Dyſentery
- Hamoptyſis
- Mennorrhagia
- Leucorrhea
- Gonnorrhea

Genus VI. Species.

Pains of the membranous parts, not suppurating.

- Pleuriſy—true and
  - ———Spurious
- Gout
- Rheumatiſm—true
  - ——and Chronic
- Cholic
- Head-ache
- Tooth-ache
- Eye & Ear-ache.

Genus VII. Species.

Miscellaneous Diseases.

- Pthyſis, &c.
- Scurvy
- Jaundice
- Scrophula
- Herpes
- Pſora
- Syphillis.

Genus VIII. Species.

Feminine affections — not comprehended.

Genus IX. Species.

Puerile Diseases — not comprehended.

TOTAL—75 Species.